

Supplementary Fig. S2 *RAG1* sequences (527 bp) of group A, B1, and B2 loaches

Sequences of group A (AB698051-AB698056) contain a *StuI* restriction site (indicated by a solid line). Sequences of group B1 (AB698049-AB698050, AB698057-AB698060) contain a *StuI* restriction site and a *PvuII* restriction site (indicated by a dotted line). Sequences of group B2 (AB698061-AB698064) have no *StuI* and *PvuII* restriction sites. Thick arrows indicate the primer sequences to amplify *RAG1* sequences (443 bp) by PCR.

	55	65	75	85	95
AB698051	ATGTGGGAAT	TATCGATGGT	CTCTCGGGTT	GGACTTCCTC	CGTGGATGAT
AB698052	ATGTGGGAAT	TATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTGGATGAT
AB698053	ATGTGGGAAT	TATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTGGATGAT
AB698054	ATGTGGGAAT	TATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTGGATGAT
AB698055	ATGTGGGAAT	TATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTGGATGAT
AB698056	ATGTGGGAAT	TATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTGGATGAT
AB698049	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAT
AB698050	ATGTGGGAAT	TATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTGGATGAT
AB698057	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAT
AB698058	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAT
AB698059	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAT
AB698060	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAT
AB698061	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAT
AB698062	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAT
AB698063	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	CGTTGATGAC
AB698064	ATGTGGGAAT	CATCGATGGC	CTCTCGGGTT	GGACTTCCTC	TGTTGATGAT

Supplementary Fig. S2 Continued

	105	115	125	135	145
AB698051	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698052	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698053	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698054	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698055	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698056	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698049	GTCCCTGCAG	ACACCATCGC	AAGAAGATTC	CGCTATGACG	TGGCACTAGT
AB698050	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698057	GTCCCTGCAG	ACACCATCGC	AAGAAGATTC	CGCTATGATG	TGGCACTAGT
AB698058	GTCCCTGCAG	ACACCATCGC	AAGAAGATTC	CGCTATGACG	TGGCACTAGT
AB698059	GTCCCTGCAG	ACACCATCGC	AAGAAGATTC	CGCTATGACG	TGGCACTAGT
AB698060	GTCCCTGCAG	ACACCATCGC	AAGAAGATTC	CGCTATGACG	TGGCACTAGT
AB698061	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGACG	TGGCACTAGT
AB698062	GTCCCTGCGG	ACACCATCGC	AAGAAGATTT	CGCTATGACG	TGGCACTAGT
AB698063	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGACG	TGGCACTAGT
AB698064	GTCCCTGCGG	ACACCATCGC	AAGAAGATTC	CGCTATGACG	TGGCACTAGT

Supplementary Fig. S2 Continued

	155	165	175	185	195
AB698051	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698052	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAAAGAGA
AB698053	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698054	TTCTGCATTA	AAAGACTTGG	ATGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698055	TTCTGCATTA	AAAGACTTAG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698056	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698049	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698050	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698057	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698058	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698059	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTGAGAGAGA
AB698060	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAGGGG	TTAAGAGAGA
AB698061	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAAGGG	TTAAGAGAGA
AB698062	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAAGGG	TTAAGAGAGA
AB698063	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAAGGG	TTAAGAGAGA
AB698064	TTCTGCATTA	AAAGACTTGG	AGGAGGACAT	CATGGAAGGG	TTAAGAGAGA

Supplementary Fig. S2 Continued

restriction site of *StuI*

	205	215	225	235	245
AB698051	GAGGCCTGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698052	GAGGCCTGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698053	GAGGCCTGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698054	GAGGCCTGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698055	GAGGCCTGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698056	GAGGCCTGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698049	GAGGCCTGGA	TGACAGCACG	TGCACCTCTG	GTTTTACCGT	GGTGGTAAAG
AB698050	GAGGCCTGGA	TGACAGCACG	TGCACCTCTG	GTTTTACCGT	GGTGGTAAAG
AB698057	GAGGCCTGGA	TGACAGCACG	TGCACCTCTG	GTTTTACCGT	GGTGGTAAAG
AB698058	AAGGCCTGGA	TGACAGCACG	TGCACCTCTG	GTTTTACCGT	GGTGGTAAAG
AB698059	GAGGCCTGGA	TGACAGCACG	TGCACCTCTG	GTTTTACCGT	GGTGGTAAAG
AB698060	GAGGCCTGGA	TGACAGCACG	TGCACCTCTG	GTTTTACCGT	GGTGGTAAAG
AB698061	GAGGCATGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698062	GAGGCATGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698063	GAGGCATGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG
AB698064	GAGGCATGGA	TGACAGCACG	TGCACTTCTG	GTTTTACCGT	GGTGGTAAAG

Supplementary Fig. S2 Continued

	255	265	275	285	295
AB698051	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698052	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698053	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698054	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698055	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698056	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698049	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698050	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698057	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698058	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698059	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698060	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698061	GAATCGTGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698062	GAATCGTGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698063	GAATCATGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC
AB698064	GAATCGTGTG	ACGGTATGGG	AGATGTTAGC	GAGAAGCATG	GATCTGGCCC

Supplementary Fig. S2 Continued

restriction site of *PvuII*


	305	315	325	335	345
AB698051	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698052	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698053	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698054	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698055	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698056	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698049	AGCTGTGCCT	GAAAAGGCAG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698050	AGCTGTGCCT	GAAAAGGCAG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698057	AGCTGTGCCT	GAAAAGGCAG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698058	AGCTGTGCCT	GAAAAGGCAG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698059	AGCTGTGCCT	GAAAAGGCAG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698060	AGCTGTGCCT	GAAAAGGCAG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698061	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698062	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698063	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT
AB698064	AGCGGTGCCT	GAAAAGGCGG	TAAGGTTTTC	CTTCACAATC	ATGTCCATTT

Supplementary Fig. S2 Continued

	355	365	375	385	395
AB698051	CCATTGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698052	CCATTGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698053	CCATTGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698054	CCATTGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698055	CCATTGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698056	CCATTGAGC	TGAAGGTGAG	GAGGATGCCA	TCACGATCTT	CCAAGAACAG
AB698049	CCATTAGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698050	CCATTAGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698057	CCATTAGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698058	CCATTAGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698059	CTATTAGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698060	CCATTAGAGC	TGAAGGTGAG	GAGGACGCCA	TCACGATCTT	CCAAGAACAG
AB698061	CCATTGAGC	TGAAGGTGAG	GAGGATGCCA	TCACGATCTT	CCAAGAACAG
AB698062	CCATTGAGC	TGAAGGTGAG	GAGGATGCCA	TCACGATCTT	CCAAGAACAG
AB698063	CCATTGAGC	TGAAGGTGAG	GAGGATGCCA	TCACGATCTT	CCAAGAACAG
AB698064	CCATTGAGC	TGAAGGTGAG	GAGGATGCCA	TCACGATCTT	CCAAGAACAG

Supplementary Fig. S2 Continued

	405	415	425	435	445
AB698051	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698052	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698053	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698054	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698055	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698056	AAGCCAACT	CTGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698049	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698050	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698057	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698058	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698059	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698060	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698061	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698062	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698063	AAGCCAACT	CTGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA
AB698064	AAGCCAACT	CGGAGCTCTC	CTGCAGACCT	CTGTGTCTCA	TGTTTGTGGA



 RAG1-M.aR

Supplementary Fig. S2 Continued

	455	465	475	485	495
AB698051	CGAGTCAGAC	CACGAAACCC	TCACGGCCAT	TTTGGGACCA	GTGGTGGCAG
AB698052	CGAGTCAGAC	CACGAAACCC	TCACGGCCAT	TTTGGGACCA	GTGGTGGCAG
AB698053	CGAGTCAGAC	CACGAAACCC	TCACGGCCAT	TTTGGGACCA	GTGGTGGCAG
AB698054	CGAGTCAGAC	CACGAAACCC	TCACGGCCAT	TTTGGGACCA	GTGGTGGCAG
AB698055	CGAGTCAGAC	CACGAAACCC	TCACGGCCAT	TTTGGGACCA	GTGGTGGCAG
AB698056	CGAGTCAGAC	CACGAAACCC	TCACGGCCAT	TTTGGGACCA	GTGGTGGCAG
AB698049	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698050	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698057	TGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698058	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698059	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698060	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698061	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698062	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698063	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG
AB698064	CGAATCAGAC	CACGAAACAC	TCACGGCCAT	CTTGGGACCA	GTGGTGGCAG

Supplementary Fig. S2 Continued

	505	515	525
AB698051	AGCGAAAAGC	CATGCTGGAA	AGTCGGC
AB698052	AGCGAAAAGC	CATGCTGGAA	AGTCGGC
AB698053	AGCGAAAAGC	CATGCTGGAA	AGTCGGC
AB698054	AGCGAAAAGC	CATGCTGGAA	AGTCGGC
AB698055	AGCGAAAAGC	CATGCTGGAA	AGTCGGC
AB698056	AGCGAAAAGC	CATGCTGGAA	AGTCGGC
AB698049	AGCGGAAAAGC	CATGCTGGAA	AGTCGAC
AB698050	AGCGGAAAAGC	CATGCTGGAA	AGTCGAC
AB698057	AGCGGAAAAGC	CATGCTGGAA	AGTCGAC
AB698058	AGCGGAAAAGC	CATGCTGGAA	AGTCGAC
AB698059	AGCGGAAAAGC	CATGCTGGAA	AGTCGAC
AB698060	AGCGGAAAAGC	CATGCTGGAA	AGTCGAC
AB698061	AGCGGAAAAGC	CATGCTGGAA	AGTCGGC
AB698062	AGCGGAAAAGC	CATGCTGGAA	AGTCGGC
AB698063	AGCGGAAAAGC	CATGCTGGAA	AGTCGGC
AB698064	AGCGGAAAAGC	CATGCTGGAA	AGTCGGC

Supplementary Fig. S2 Continued