

Supplement 1: List of published research articles dealing with TSP in vertebrate immune genes available on Web of Science [final update 19th March 2015]. Given by the variability in terminology adopted by different authors the articles have been systematically searched by the following formula: Topic: “Trans-species polymorphism” OR “Tran-species polymorphism” OR “Transspecies polymorphism” OR “Transpecies polymorphism ”OR” Trans-species evolution” OR ”Tran-species evolution” OR ”Transspecies evolution” OR ”Transpecies evolution” OR “Trans-specific polymorphism” OR “Tran-specific polymorphism” OR “Transspecific polymorphism” OR “Transpecific polymorphism” OR ”Trans-specific evolution” OR ”Tran-specific evolution” OR ”Transspecific evolution” OR ”Transpecific evolution” OR “shared polymorphism”. Articles dealing with TSP in blood group systems and serological allomorphs were not included into this survey. MHC – Major histocompatibility complex, Ig – Immunoglobulins, PSMB8 – Proteasome subunit beta-type 8 gene (syn. LMP7), IgVH - Immunoglobulin heavy chain gene, HDP – Host-defence peptides, AvBD12 – Avian beta beta-defensin 12, OAS – Oligoadenylat synthetase, TRIM – Tripartite motif protein, CDS – Coding DNA sequence, Ex. – exon, Int. – Intron, undif. – undifferentiated, Ref. – Reference. Gene subregions in round brackets indicate TSP detected in whole fragment, in contrast to gene segments connected with “and” indicating TSP reported independently for separate regions. Taxon includes only the taxonomy units with TSP detected.

Gene group	Gene name	Gene function	Gene subregion	Taxon	Taxon (scientific)	Ref.
MHC	MHC I-A	antigen presentation	CDS	Mammals: cercopithecine monkeys	Cercopithecoidea	[1]
MHC	MHC I-A	antigen presentation	ex. 2 and ex. 3	Mammals: primates	Primates	[2]
MHC	MHC I-A	antigen presentation	CDS	Mammals: human and chimpanze	<i>Pan and Homo</i>	[3]
MHC	MHC I-B	antigen presentation	CDS	Mammals: cercopithecine monkeys	Cercopithecoidea	[1]
MHC	MHC I-B	antigen presentation	ex. 2 and ex. 3	Mammals: primates	Primates	[2]
MHC	MHC I-B	antigen presentation	CDS	Mammals: human and chimpanze	<i>Pan and Homo</i>	[3]
MHC	MHC I-C	antigen presentation	ex. 2 and ex. 3	Mammals: primates	Primates	[2]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 and ex. 3	Mammals: night monkeys	<i>Asio</i>	[4]
MHC	MHC Ia (undif.)	antigen presentation	(ex. 2, 3)	Mammals: bisons	<i>Bison bonasus and Bison bison</i>	[5]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2	Mammals: cetaceans	Cetacea	[6]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2	Mammals: carnivores	<i>Meles meles and Taxidoea taxus</i> and other Ursiadae, Caniadae, Phociane	[7]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2	Mammals: felids	Felidae	[8]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2	Mammals: bears	Ursidae	[9]
MHC	MHC Ia (undif.)	antigen presentation	ex. 3	Birds: songbirds	<i>Passer and Acrocephalus</i>	[10]
MHC	MHC Ia (undif.)	antigen presentation	ex. 3	Birds: songbirds	<i>Acrocephallus arundicaneus and Acrocephallus sechelensis</i>	[11]
MHC	MHC Ia (undif.)	antigen presentation	ex. 4	Reptiles: lizards	<i>Eremias</i>	[12]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 and ex. 3	Reptiles: iguanas	Iguanidae	[13]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2	Reptiles: sea turtle and other reptiles	<i>Carreta caretta</i> with other reptiles	[14]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 ex. 3	Amphibians: shrub frogs	Rhacoporiadae species and	[15]

Gene group	Gene name	Gene function	Gene subregion	Taxon	Taxon (scientific)	Ref.
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 and ex. 3	Amphibians: frogs	other frog families Hylidae, Centrolenidae, Ranidae	[16]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 and ex. 3 and ex. 4)	Amphibians: frogs	<i>Xenopus</i>	[17]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 and ex. 3	Fish: paddlefish and Chinese sturgeon	<i>Polyodon spathula</i> and <i>Acipenser sinensis</i>	[18]
MHC	MHC Ia (undif.)	antigen presentation	gene fragment	Fish : basses	<i>Morone</i>	[19]
MHC	MHC Ia (undif.)	antigen presentation	(ex. 2, 3)	Fish: salmonids	Salmonide	[20]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 and ex. 3 and ex. 4	Fish: bone fish	Salmoniformes and Cypriniformes	[21]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2 and ex. 3	Fish: white fish with other salmonids	<i>Coregonus</i> with other salmonids	[22]
MHC	MHC Ia (undif.)	antigen presentation	ex. 2	Fish: salmonids	Salmonidae	[23]
MHC	MHC I-E	antigen presentation	ex. 2 and ex. 3	Mammals: cercopithecine monkeys	Cercopithecoidea	[24]
MHC	MHC I-G	antigen presentation	ex. 2	Mammals: old world monkeys	Pongiadae, Cercopitheciane	[25]
MHC	MHC IIA (DPA)	antigen presentation	ex. 2	Mammals: old world monkey	Catarrhini	[26]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: primates	Primates	[27]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: old world monkey	Catarrhini	[26]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: blesmoles and mole rats	Bathyergidae	[28]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: bovids	Bovinae	[29]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: bovids	Boviane	[30]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: cetaceans	Cetacea	[6]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: horses	<i>Equus</i>	[31]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: horses	<i>Equus</i>	[32]
MHC	MHC IIA (DRA)	antigen presentation	ex. 2	Mammals: horses	<i>Equus</i>	[33]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: primates	Primates	[27]
MHC	MHC IIA (DQA)	antigen presentation	promotor region	Mammals: primates	Primates	[34]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: rodents	Rodentia	[35]
MHC	MHC IIA (DQA)	antigen presentation	(int. 1, ex. 2)	Mammals: tuco-tucos	<i>Ctenomys</i>	[36]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: hares and rabbits	<i>Lepus</i> and <i>Oryctolagus</i>	[37]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: hares and rabbits	<i>Lepus</i> and <i>Oryctolagus</i>	[35]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: hares and rabbits	Leporidae	[38]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: voles	Arvicolinae	[39]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: carnivores	<i>Meles meles</i> and <i>Taxidoea taxus</i> and with other carnivores	[40]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: canids	Canidae	[31]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: bears	Ursiadae	[9]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: domestic pig and wild boar	<i>Sus scrofa</i> f. <i>domestica</i> and <i>Sus scrofa</i>	[41]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: caprids and bovids	Caprinae and Bovidae	[42]

Gene group	Gene name	Gene function	Gene subregion	Taxon	Taxon (scientific)	Ref.
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: sheeps	<i>Ovies</i>	[43]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: bovids	Bovidae	[44]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: ruminants	Bovianae and Cervidae	[45]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: cetaceans	Cetacea	[6]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: horses	<i>Equus</i>	[32]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2	Mammals: horses	<i>Equus</i>	[33]
MHC	MHC IIA (DQA)	antigen presentation	ex. 2 and int. 2	Mammals: elephants	<i>Elephas</i> and <i>Loxodonta</i>	[46]
MHC	MHC IIA (DAA)	antigen presentation	ex. 2	Fish: salmons	<i>Salmo</i>	[47]
MHC	MHC IIA (DAA)	antigen presentation	ex. 2	Fish: danio	<i>Danio</i>	[48]
MHC	MHC IIA (undif.)	antigen presentation	ex. 2	Mammals: mice	<i>Mus</i>	[49]
MHC	MHC IIA (undif.)	antigen presentation	(ex. 2, 3)	Reptiles: crocodiles	Crocodylia	[50]
MHC	MHC IIB (DPB)	antigen presentation	ex. 2	Mammals: macaques	<i>Macaca</i>	[51]
MHC	MHC IIB (DPB)	antigen presentation	ex. 2	Mammals: macaques	<i>Macaca</i>	[52]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: old world monkey	Catarrhini	[53]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: primates	<i>Rhinopithecus roxellana</i> and other primates	[54]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: primates	Primates	[2]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: old world monkey	Catarrhini	[55]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: old world monkey	Catarrhini	[56]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: primates	Primates	[57]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: primates	Primates	[58]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: old world monkey	Catarrhini	[59]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: primates	Primates	[60]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: hominoids	Hominoidea	[61]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: old word monkeys	Catarrhini	[62]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: hominoids	Hominoidea	[63]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: hominoids	Hominoidea	[60]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: lemurs	Lemuriformes	[64]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: rodents	<i>Sylvaticus</i> with other Muridae	[65]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: rodents	Rodentia	[66]
MHC	MHC IIB (DRB)	antigen presentation	(int. 1, ex. 2)	Mammals: tuco-tucos	<i>Ctenomys</i>	[36]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: rodents	Rodentia	[67]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: carnivores	Ursidae and Felidae	[68]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: carnivores	Ursidae and Felidae	[69]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: hyeanas	Hyaeninae	[70]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: canids	Canidae	[71]

Gene group	Gene name	Gene function	Gene subregion	Taxon	Taxon (scientific)	Ref.
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: minks	Mustelinae	[72]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: felids	Felidae	[73]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: canids	Canidae	[31]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: bears	Ursiadae	[9]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: carnivores	<i>Meles meles</i> and <i>Taxidoea taxus</i> and with other carnivores	[40]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: felids	Felidae	[8]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: ungulates	Boviane, Caprinae, Cervidae, Alcelaphinae	[74]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: ruminants	within Cervinae and beetween Cervinae and Caprinae	[75]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: ruminants	Boviane	[30]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: ruminants	Boviane	[76]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: sheeps	<i>Ovies</i>	[77]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: caprids	Caprinae	[78]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: cervids	Cervidae	[79]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: cervids	Cervidae	[80]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: bovids	Bovinae	[81]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: cervids	Cervidae	[82]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: domestic pig and wild boar	<i>Sus scrofa</i> f. <i>domestica</i> and <i>Sus scrofa</i>	[41]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Mammals: bats	within <i>Noctillo</i> and <i>Myotis</i>	[83]
MHC	MHC IIB (DRB)	antigen presentation	ex. 2	Birds: aucllets	<i>Aethia</i>	[84]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: primates	Primates	[85]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: macaques	<i>Macaca</i>	[86]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: primates	Primates	[27]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: primates	Primates	[87]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: macaques	<i>Macaca</i>	[88]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: ruminants	within Cervinae and beetween Cervinae and Caprinae	[75]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: bovids	Bovinae	[89]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: dolphins	Delphinidae	[90]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: cetaceans, primates, even-toed ungulates	Cetacea, Primates, Artiodactyla	[91]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: hyeanas	Hyaenidae	[70]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: canids	Canidae	[31]
MHC	MHC IIB (DQB)	antigen presentation	ex. 2	Mammals: bears	Ursiadae	[9]
MHC	MHC IIB (DRB like)	antigen presentation	(ex. 1, 2, 3)	Birds: penguins	<i>Spheniscus</i>	[92]
MHC	MHC IIB (DRB like)	antigen presentation	ex. 2	Birds: penguins	<i>Spheniscus</i>	[93]

Gene group	Gene name	Gene function	Gene subregion	Taxon	Taxon (scientific)	Ref.
MHC	MHC IIB (DAB)	antigen presentation	ex. 2	Mammals: mouse opossums	<i>Gracilinanus microtarsus</i> and <i>Marmosops incanus</i>	[94]
MHC	MHC IIB (DAB)	antigen presentation	ex. 2	Birds: herons	Ardeidae	[95]
MHC	MHC IIB (DAB)	antigen presentation	ex. 2	Birds: owls	Strygidae	[96]
MHC	MHC IIB (DAB)	antigen presentation	(ex. 2, 3)	Fish: cyprinids	Cyprinae, Leucisnae, Gobioniana, Tincinae, Cyprininae	[97]
MHC	MHC IIB (DAB)	antigen presentation	ex. 2	Fish: salmonids	<i>Salmo</i>	[47]
MHC	MHC IIB (DAB)	antigen presentation	ex. 2	Fish: danio	<i>Danio</i>	[48]
MHC	MHC IIB (DAB)	antigen presentation	ex. 2	Fish: cyprinids	<i>Chondrostoma</i>	[98]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Mammals: mice	<i>Mus</i>	[49]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Mammals: felids	Felidae	[99]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Birds: thin-billed prion and blue petrel	between <i>Pachyptila belcheri</i> and <i>Halobaena caerulea</i>	[100]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Birds: falcons and vulture	within <i>Falco</i> and <i>Gyps</i>	[101]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Birds: thrush nightingale and bluethroat	<i>Luscinia luscinia</i> and <i>Luscinia svecica</i>	[102]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Birds: songbirds	<i>Nesospiza</i> and <i>Rowettia</i>	[103]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Birds: drepanids	Drepanidinae	[104]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Birds: Darwin's Finches and their close relatives	several tribes	[105]
MHC	MHC IIB (undif.)	antigen presentation	ex. 3	Reptiles: crocodiles	Crocodylia	[50]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Amphibian: frogs	Ranidae	[106]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Amphibian: frogs	<i>Ranna</i>	[107]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Fish: sticklebacks	<i>Gasterosteus aculeatus</i> and <i>Pungitius pungitius</i>	[108]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Fish: cyprinids	Leuciscinae	[109]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Fish: salmonids	Salmonidae	[110]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Fish: salmonids	Salmonidae	[111]
MHC	MHC IIB (undif.)	antigen presentation	ex. 2	Fish: white fish with other salmonids	<i>Coregonus</i> with other geni within salmonids	[22]
Non-MHC Ig	PSMB8	proteolytic cleavage within immunoproteasome	(ex. 2, 3)	Fish: bone fish	between and within Salmoniformes and Cypriniformes	[112]
Non-MHC Ig	PSMB8	proteolytic cleavage within immunoproteasome	(ex. 2, 3)	Fish: ricefishes	<i>Oryzias</i>	[113]
Non-MHC Ig	PSMB8	proteolytic cleavage within immunoproteasome	CDS	Amphibians: frogs	<i>Xenopus</i>	[114]
Non-MHC Ig	PSMB8	proteolytic cleavage within immunoproteasome	CDS	Fish: ray-finned fish	Osteoglossiformes and Osmeriformes	[115]
Non-MHC Ig	IgVH	antigen binding at VH domain of antibody	gene fragment	Mammals: hares and rabbits	<i>Lepus</i> and <i>Oryctolagus</i>	[116]
Non-MHC Ig	IgVH	antigen binding at VH domain of antibody	gene fragment	Mammals: hares and rabbits	<i>Lepus</i> and <i>Oryctolagus</i>	[117]

Gene group	Gene name	Gene function	Gene subregion	Taxon	Taxon (scientific)	Ref.
Non-MHC Ig	C Alfa gene	constant domain of IgA - hinge region	ex. 2	Mammals: macaques	<i>Macaca</i>	[118]
Non-MHC Ig	C Alfa gene	constant domain of IgA - hinge region	ex. 2	Mammals: new world monkeys, old world monkeys	Catyrnii and Platyrrhini	[119]
HDP	AvBD12	disruption of bacterial cytoplasmic membrane	ex. 3	Birds: tits	<i>Parus major</i> and <i>Cyanistes caeruleus</i>	[120]
2-5A synthetase	OAS1b	activation of RNAse followed by dsRNA degradation	ex. and int.	Mammals: mice	<i>Mus</i>	[121]
2-5A synthetase	OAS1	activation of RNAse followed by dsRNA degradation	CDS	Mammals: hominoids	Hominoidea	[122]
TRIM	TRIM5alfa	restriction viral factor - capsid interfering protein	CDS	Mammals: macaques	<i>Macaca</i>	[123]
TRIM	TRIM5alfa	restriction viral factor - capsid interfering protein	int. 1	Mammals: human and chimpanze	<i>Pan</i> and <i>Homo</i>	[124]

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