P3041

The Swine Leukocyte Antigen (SLA) Nomenclature System: Current Status after 10 Years of its Establishment

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[ABSTRACT]

The SLA Nomenclature Committee was established in 2002 at the 28th ISAG Annual Conference in Göttingen, Germany. It is now also affiliated to the Veterinary Immunology Committee of the International Union of Immunological Societies (IUIS-VIC), which is the umbrella organization for immunology societies worldwide. To date, there are 131 class I (SLA-1, SLA-2, SLA-3, SLA-6) and 174 class II (DRA, DRB1, DQA, DQB1, DMA) alleles officially designated. There are also 31 class I (SLA-1-3-2-6) and 26 class II (DRA-DRB1-DQA-DQB1) high-resolution (allele level) haplotypes designated, while designation of low-resolution (allele group level) haplotypes is in progress. In conclusion, the SLA system is among the most well characterized MHC systems in non-primate species. Continuous efforts on characterizing new SLA alleles and studying of SLA diversity in various pig populations will further our understanding of the allelic architecture and polymorphism of the SLA system, which may ultimately facilitate the research on swine immunology, vaccine development, and the use of swine as a large biomedical animal model.

2012 ISAG SLA Nomenclature Committee

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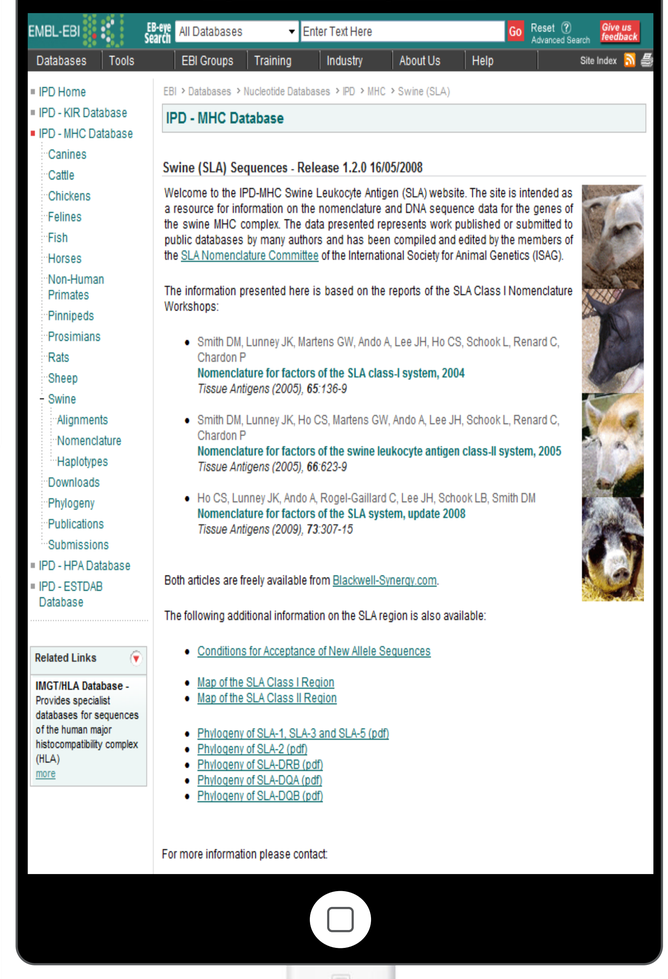
IPD-MHC SLA Sequence Database Website

http://www.ebi.ac.uk/ipd/mhc/sla



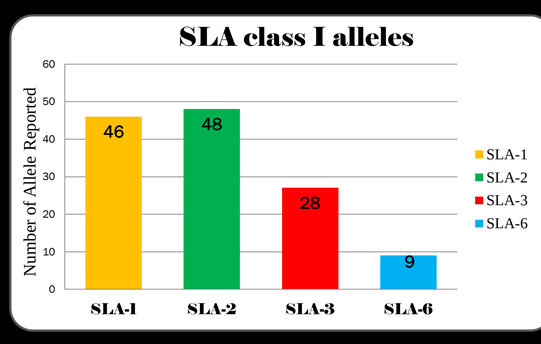
[Statistics of Current SLA Sequence Database]

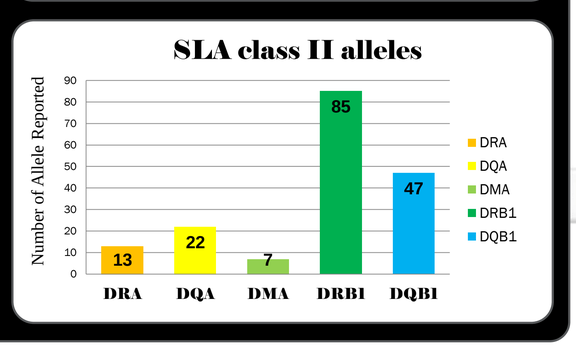
2005 → 2009 → Currently

	Identified alleles
SLA class I	88
SLA class II	127

	Previously identified Alleles (2005)		Newly identified alleles		Total
SLA class I	88	+	37	=	125
SLA class II	127	+	37	=	164

	Previously identified Alleles (2009)		Newly identified alleles		Total
SLA class I	125	+	6	=	131
SLA class II	164	+	10	=	174





[SLA class I and II haplotypes]

Table 1. High-resolution (Hp) 31 SLA class I and 26 SLA class II haplotypes

Hp-[a]	Breed[b]	Previous designation	SLA-1	SLA-3	SLA-2	SLA-6
1a.0	Large White	H01	0101	0101	0101	0101
1b.0	Large White	H28	01rh28	01rh28	0101	ND[c]
2.0	NIH, Sinclair, Hanford	a, b, H10	0201, 0701	Null[d]	0201	w02sa01
3.0	NIH	c, H59	Null	0301	0301	0103
4a.0	NIH, Duroc	d, H04	0401	0401	0401	0102
4b.0	Yucatan	x	0401	0401	040201	0104
4c.0	Meishan	k	0401	0401	0401	0104
5.0	Yucatan	w	0401	05sw01	w08sw01	Null
6.0	Yucatan	y	08sy01	0601	05sy01	03sy01
7.0	Yucatan	z	0801	0701	0502	0101
8.0	Westran	None	02we02, 04we01	0302	07we01	01we01
9.0	Sinclair, Hanford	a	0601	0501	0601	ND
10.0	Sinclair	e	0501	hm22	0302	ND
11.0	Sinclair	d	0101, w09sm09	0701sm19	0501	ND
12.0	Hanford	e	08sm08, w09sm09	0502	10sm01	ND
13.0	Hanford	f, d2	w10sm21	0401	w13sm20	ND
14.0	Large White	H12	0102	01rh12	07rh12	ND
15.0	Large White	H34	0102	07rh34	05rh34	ND
16.0	Clawn	e1	0401	0602	w09an02	ND
17.0	Clawn	e2	ND	03an02	06an03	ND
18.0	Meishan	M	0401	0304	06me01	0102
19.0	Meishan	N	08sm05, 13sm21	0602	w09sn01	0105
20.0	Meishan	L	w10cs01, cs02	0101	110102	0103
21.0	Commercial breeds	H03	rh03	0601	05rh03	ND
25.0	Hampshire[e]	None	1101	0302	0701	ND
27.0	Duroc	d1	06an04, 08an03	0101	0102	ND
28.0	Landrace	HL1	0901 (a), 1501 (b)	070102	0503	ND
56.0	Korean native pig	None	11jh01	0303	jh01	w04jh01
59.0	Korean native pig	None	11jh02	0503	jh02	0102
60.0	Duroc	d2	an02	0502	1002	ND
62.0	Landrace	HL2	1401	hb06	0602	ND

Hp-[a]	Breed[b]	Previous designation	DRB1	DQB1	DQA	DRA
0.1	Large White, Korean native pig	H01	0101	0101	0101	010101
0.2	NIH, Sinclair, Hanford	a, b	0201	0201	0201	010101
0.3	NIH	c	0301	0301	0102	0201
0.4	NIH	d	0201	040101	020201	010102
0.5	Yucatan	x	0501	0201	020202	020301
0.6	Yucatan	w	0501	0801	0103	020203
0.7	Yucatan	y	0601	0601	01my01	0203my01
0.8	Yucatan	z	0801	0202	0203	010101
0.9	Westran	None	0201	0402we01	03we01	0101we01
0.10	Sinclair, Hanford	a	0401	0801	ND[c]	ND
0.11	Sinclair	e	0901	0402	ND	020202
0.12	Sinclair	d	0602	0701	0301	020201
0.13	Hanford, Duroc	e, d2	0403	0303	ND	ND
0.14	Meishan	M, K	0901	0801	0301	010103
0.15a	Meishan	N	0401	0201	0203	0201
0.15b	Banna	None	0402	0202	020202	020301
0.16	Clawn	e1	Hac21	0601	ND	ND
0.17	Clawn	e2	0801	0501	ND	ND
0.18	Meishan	L	1401	040102	02cs01	010103
0.19	SNU, Austrian Pietrain		0404	0701	ND	ND
0.20	Austrian Pietrain (n = 2)		0602	0303	ND	ND
0.23	Korean native pig, Landrace, Austrian Pietrain		1001	0601	ND	ND
0.24	Austrian Pietrain (n = 1)		0701	0201	ND	ND
0.25	Hampshire[e], Austrian Pietrain	None	1301	0901	ND	ND
0.30	Korean native pig, Duroc	d1	1101	0503	02jh01	020202
0.38	Landrace		0101	0901	ND	ND

[a] SLA class I and II haplotype assignments based on Smith *et al.*, 2005.
[b] Breed in which the haplotype was sequence-based typed; haplotype may be found in other breeds.
[c] ND, not determined specific allele at this locus.
[d] Null, no expression of this locus.
[e] Haplotype Hp-25.0 and Hp-0.25 were found in the LLC-PK1 pig cell line (ATCC) derived from a Hampshire pig.

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