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A Nomenclature for Signal Regulatory Protein Family Members

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BRIEF REVIEWS

A Nomenclature for Signal Regulatory Protein Family Members

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Signal regulatory proteins (SIRPs) constitute a family of structurally related surface receptors expressed on leukocytes as well as other cells. SIRPs are characterized by the presence of Ig-like domains and form a subfamily within the Ig superfamily. In the accompanying review (1), a description of the composition of the SIRP family in various species of mammals (e.g., man, chimpanzee, mouse, and rat) and birds (e.g., chicken) is provided, which includes 16 family members not previously reported in the literature. Because of this, as well as the potentially confusing multiplicity of names that exists for some family members (e.g., SIRP α /SHPS-1/PTPNS1/MFR/p84/BIT/CD172a), we would like to propose a nomenclature for the SIRP family. We hope that this will lead to the use of a consistent and generally accepted terminology for SIRP family members.

Firstly, we have chosen the term “SIRP” to describe members of the family in general. We realize that in the case of SIRP α , which was originally termed SHPS-1 (for src-homology phosphatase substrate-1), that our terminology does not completely do justice to its inventors, including Masato Kasuga and Takashi Matozaki and their coworkers (2), who were the first to describe cloning of the molecule, and also Ohnishi et al. (3) working on the brain protein (which they named BIT). However, considering the fact that most other family members lack ITIMs, and therefore will probably not act as SHP interacting molecules/substrates, we feel that the term SHPS would be inappropriate as a general term to describe members of the family. We would like to emphasize that this does not in any way exclude the use of the term SHPS-1, nor any of the other names used, for the SIRP α molecule. However, the term SIRP is preferred when referring to these proteins as a group at least. We

have chosen not to standardize on the CD nomenclature as only three human SIRPs have been given CD numbers—CD172a, CD172b, and CD172g—and a nomenclature is needed to accommodate the other genes. Also, as discussed below, the CD172 species orthologs are not obvious.

Clearly, a common denominator of SIRP family members is the presence of typical SIRP-related Ig domains. We propose to further classify SIRP gene products according to their other structural/functional properties and at the same time conform to the currently used terminology as much as possible: SIRP α is used for transmembrane members with typical ITIMs; SIRP β is used for transmembrane members with a positively charged residue (typically a lysine) in the transmembrane region that is therefore likely to associate with and signal via adaptor proteins, such as DAP12; SIRP γ is used for transmembrane members lacking the two above properties; and SIRP δ is used for members lacking a putative transmembrane region.

For more than one member with any of the above characteristics Arabic numbers can be used as an identifier (e.g., SIRP β 1 and SIRP β 2). We propose to number according to the order of description in the literature, which is mostly in line with current terminology. In doing so we have chosen not to take into consideration the possible ortholog comparisons, because these are often difficult if not impossible to determine (see the accompanying review for details (1)). For example there is no ortholog relationship between the human SIRP β 2, the (rat) rSIRP β 2, and (mouse) mSIRP β 2 despite the apparent overall structural similarities.

There are a number of SIRP pseudogenes, which are indicated with a “p” (e.g., SIRP α 2p). We further propose to refer to the human SIRP members without any prefix and to use the

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Table I. *SIRP family nomenclature*

Name	Alternative Name(s)	Database Accession No.
SIRP α	SHPS-1,PTPNS1,MFR,p84,BIT,CD172a	CAA71403, NP_542970
SIRP β 1	SIRP β ,CD172b	XM_016657
SIRP γ	SIRP β 2,CD172g	Q9P1W8
SIRP β 2		XP_209363
SIRP δ		AAH33502
cSIRP α 2		ENSPTRG00000014139
cSIRP β 1		ENSPTRG00000013167
cSIRP γ		ENSPTRG00000013169
cSIRP β 2		ENSPTRG00000013165
cSIRP δ		ENSPTRG00000013166
rSIRP α		BAA12734
rSIRP β 1		XP_226929
rSIRP β 2		XP_226927
rSIRP β 3		XP_230596
rSIRP β 4		XP_226931
mSIRP α		NP_031573
mSIRP β 1	Mouse SIRP β , IIBP	BAC35818
mSIRP β 2		XP_355437
mSIRP β 3		NP_808321
bSIRP α	Myd-1	CA71942, CA71943
gSIRP α		ENSGALG00000006171
gSIRP γ		ENSGALG00000006152
gSIRP δ		ENSGALG00000006176

following prefixes for other species: c = chimpanzee; r = rat; m = mouse; b = bovine; g = chicken (*Gallus gallus*). For SIRPs to be described in the future from other species, additional prefixes can be introduced.

Taken together, this leads to the terminology that is listed in Table I. We propose that this nomenclature be adopted and, where necessary, extended to describe members of the SIRP family.

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