

An update of the S100 nomenclature

Ingo Marenholz^a, Ruth C. Lovering^b, Claus W. Heizmann^{c,*}

^a *Pediatric Pneumology and Immunology, Charité Medical Faculty, Berlin, Germany*

^b *HUGO Gene Nomenclature Committee, Galton Laboratory, Department of Biology, University College London, UK*

^c *Division of Clinical Chemistry and Biochemistry, Department of Pediatrics, University of Zurich, Steinwiesstrasse 75, 8032 Zurich, Switzerland*

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Abstract

The plethora of names given to S100 proteins resulted in considerable confusion. Here we present the official and updated nomenclature of this protein family, approved by the HGNC (HUGO gene nomenclature committee) and ECS (European Calcium Society).
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The plethora of names given to the early members of the S100 family, which resulted in considerable confusion in this field of research, prompted Schaefer et al. [1] to introduce the nomenclature of the S100 family. Although agreed upon by the European Calcium Society (ECS) and approved by the HUGO gene nomenclature committee (HGNC), there seems to be an addiction to continue with confusion in this field. Just recently, several S100 loci needed to be renamed according to the established nomenclature of the S100 family [2]. Nevertheless, Zimmer et al. [3] again pointed to discrepancies in the S100 nomenclature, the source of which was an article describing three allegedly new S100 genes (S100A15, S100A16 and S100A17) within the S100 gene cluster on human chromosome 1q21 [4]. One of these genes (S100A15) had already been published with the approved gene symbol S100A16 [5] (see Table 1). The remaining two (designated S100A16 and S100A17) are not S100 family members but belong to the “fused” gene family (approved gene nomenclature: HRNR, hornerin and TCHHL1, trichohyalin-like 1 respectively). Although carrying the S100 specific EF-hand motif at the N-terminus, proteins of the fused family are characterized by a

large repeat domain, which represents the majority of the protein. Due to this structural singularity, which most likely has its origin in an early gene fusion, the members of this family should not be classified as S100 proteins but as a separate family.

Four S100 gene symbols have now been changed according to the functional relevance and phylogenetic relationships of the genes. S100A7L1/S100A15 was renamed S100A7A to indicate its high homology with S100A7. S100A15 has been withdrawn as an official gene symbol and will not be used for any future S100A genes. Because S100A7L3 and S100A7L4 are non-coding genes, their new gene symbols are S100A7P1 and S100A7P2 respectively. Finally, CALB3 (calbindin 3) has been renamed S100G, to make its affiliation to the S100 family more obvious.

We hope that the nomenclature approved for the S100 gene family listed in the attached table will be followed in future publications and discussions. For more details about HGNC approved nomenclature please see <http://www.gene.ucl.ac.uk/nomenclature/index.html>.

References

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* Corresponding author. Tel.: +41 44 266 7541; fax: +41 44 266 7169.
E-mail address: Claus.Heizmann@kispi.unizh.ch (C.W. Heizmann).

Table 1
Nomenclature and chromosomal location of the S100 genes

Approved gene symbol	Approved gene name	Previous symbols and aliases	Chromosomal location	Sequence Accession ID
S100A1	S100 calcium binding protein A1	S100A, S100-alpha	1q21	NM_006271
S100A2	S100 calcium binding protein A2	S100L, CaN19	1q21	NM_005978
S100A3	S100 calcium binding protein A3	S100E	1q21	NM_002960
S100A4	S100 calcium binding protein A4	Calvasculin, metastasin, murine placental homolog, calcium placental protein (CAPL), MTSI, p9Ka, 18A2, pEL98, 42A	1q21	NM_002961
S100A5	S100 calcium binding protein A5	S100D	1q21	NM_002962
S100A6	S100 calcium binding protein A6	Calcyclin (CACY), 2A9, PRA, CABP	1q21	NM_014624
S100A7	S100 calcium binding protein A7	Psoriasis 1 (PSOR1), S100A7c	1q21	NM_002963
S100A7A	S100 calcium binding protein A7A	S100A15, S100A7L1	1q21	NM_176823
S100A7L2	S100 calcium binding protein A7-like 2	S100A7b	1q21	–
S100A7P1	S100 calcium binding protein A7 pseudogene 1	S100A7L3, S100A7d	1q21	–
S100A7P2	S100 calcium binding protein A7 pseudogene 2	S100A7L4, S100A7e	1q21	–
S100A8	S100 calcium binding protein A8	Calgranulin A (CAGA), CGLA, P8, MRP8, CFAG, LIAg, 60B8AG	1q21	NM_002964
S100A9	S100 calcium binding protein A9	Calgranulin B (CAGB), CGLB, P14, MRP14, CFAG, LIAg, 60B8AG	1q21	NM_002965
S100A10	S100 calcium binding protein A10	Annexin II ligand (ANX2LG), calpactin I, light polypeptide (CAL1L), p11, CLP11, 42C	1q21	NM_002966
S100A11	S100 calcium binding protein A11	Calgizzarin, S100C	1q21	NM_005620
S100A11P	S100 calcium binding protein A11 pseudogene	S100A14	7q22–q31	–
S100A12	S100 calcium binding protein A12	Calgranulin C (CAGC), CAAF1, CGRP, p6, ENRAGE	1q21	NM_005621
S100A13	S100 calcium binding protein A13		1q21	NM_005979
S100A14	S100 calcium binding protein A14	BCMP84, S100A15	1q21	NM_020672
S100A16	S100 calcium binding protein A16	S100F, DT1P1A7, MGC17528	1q21	NM_080388
S100B	S100 calcium binding protein B	S100-beta	21q22	NM_006272
S100G	S100 calcium binding protein G	Calbindin 3 (CALB3), CaBP9K, CABP1	Xp22	NM_004057
S100P	S100 calcium binding protein P		4p16	NM_005980
S100Z	S100 calcium binding protein Z	S100-zeta	5q13	NM_130772

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