# Problems with LAP nomenclature

*To the editor* —It was recently proposed[1,2] that a group of cell-surface proteins with leucine-rich repeats (LRRs) and a PSD-95/Dlg/ZO-1 (PDZ) domain, which have roles in epithelial cell shape and polarity, be collectively termed 'LAP' proteins (LRR and PDZ domain). This choice of name is inappropriate. 'LAP' is already used to designate two leucine aminopeptidase genes (LAP1 and LAP2), the herpesvirus latency-active promoter, and a liver activating protein. Our direct concern is that LAP also designates a family of lamin-associated polypeptides (LAPs) in the nuclear envelope, which were reported in 1993. The term LAP has been used widely in the nuclear envelope literature, appearing in over 36 papers since 1993. The nuclear LAP1 and LAP2 genes encode alternatively spliced products (three and nine, respectively), many of which have distinct nuclear localizations and functions. Further lamin-associated proteins undoubtedly remain to be discovered, and interest in this area is high because of recent discoveries linking a LAP2-related protein, Emerin, to Emery–Dreifuss muscular dystrophy (EDMD), and linking lamin mutations to at least three different inherited diseases[4,5]. To avoid further confusion in the literature, we respectfully urge you to discuss these problems with our PDZ domain colleagues, and encourage them to choose a new, preferably four-letter name for LRR/PDZ domain proteins that does not duplicate a previously established name.
Sincerely,

**Katherine L. Wilson*, Ricardo Benavente†, Brian Burke‡, Robert Craigie§, Roland Foisner¶, Kazuhiro Furukawa#, Larry Gerace**, Robert D. Goldman††, Yosef Gruenbaum‡‡, Crafford Harris§§, Christopher J. Hutchison¶¶, Georg Krohne†, Glenn E. Morris##, Henning Otto***, Amos J. Simon†††, Howard J. Worman‡‡‡**

**John Hopkins School of Medicine, Baltimore, USA; †University of Würzburg, Germany; ‡University of Calgary, Canada; §National Institute of Health, Bethesda, Maryland, USA; ¶University of Vienna, Austria; #Niigata University, Japan; **Scripps Research Institute, California, USA; ††Northwestern University Medical School, Chicago, Illinois, USA; ‡‡Hebrew University of Jerusalem, Israel; §§R. W. Johnson Pharmaceutical Research Institute, San Diego, California, USA; ¶¶University of Durham, UK; ***Freie Universitat Berlin, Germany; ††† Chaim Sheba Medical Center, Tel Hashomer Israel; ‡‡‡Columbia University, New York, USA*

1. Bilder *et al. Nature Cell Biol.* **2,** E114 (2000).
2. Bryant, P.J. & Huwe, A. *Nature Cell Biol.* **2,** E141–143 (2000).
3. Foisner, R. & Gerace, L. *Cell* **73,** 1267–1279 (1993).
4. Wilson, K.L. T*rends Cell Biol.* **10,** 125–129 (2000).
5. Bonne *et al. Annals Neurol.* **48,** 170–180 (2000).

# Response

*To the editor* — In calling attention to the several biomolecular entities whose names have been abbreviated 'LAP', Wilson *et al.* raise an important issue. Acronyms and similar abbreviations are beneficial for a term that is used repeatedly in a publication; however, the existence of multiple entities that use the same abbreviation can cause confusion. It is for this reason that the universal standard of journals calls for explicit definition of an abbreviation at its first usage in a paper. This technique serves to dispel ambiguity that might arise.
In selecting an acronym for the leucine-rich repeat and PDZ-domain-containing (LAP) family of proteins, we searched the PubMed database, as well as the curated LocusLink nomenclature database (www.ncbi.nlm.nih.gov/LocusLink/), for previous uses of the abbreviation. As pointed out by Wilson *et al.*, LAP has been used for over 35 years to abbreviate the names of individual proteins (leucine aminopeptidase, liver activating protein), a group of unrelated proteins that share binding partners (lamin-associated polypeptides), and an inherited human disorder (laryngeal adductor paralysis), as well as a gene-regulatory element (latency-associated or active promoter). We have used this acronym in a distinct, non-overlapping context: to describe a structurally related protein family. Along with the initial explicit definition, the usage 'LAP protein family' serves to distinguish the family of proteins that includes Densin-180, Scribble, Let-413 and ERBIN from other biomolecules. Because this is a distinct usage we will continue to apply it.

**David Bilder*, Daniel Birnbaum†, Jean-Paul Borg†, Jon Huibregtse‡, Mary Kennedy§, Michel Labouesse¶, Bernard Mechler#, Norbert Perrimon***

**Department of Genetics, Harvard Medical School, Boston, Massachusetts, USA; †U119 INSERM, Molecular Oncology, Marseille, France; ‡ICMB, University of Texas at Austin, Texas, USA; §Division of Biology, California Institute of Technology, Pasedena, California, USA; ¶IGBMC, CNRS/INSERM/ULP, Iukrich, France; #Developmental Genetics, Deutsches Krebforshungs-Zentrum, Heidelberg, Germany*

## LAP abbreviations

(LocusLink nomenclature database: www.ncbi.nlm.nih.gov/LocusLink/)

- Hyperlipidemia atherosclerosis prone
- Leucine aminopeptidase genes (LAP1 and LAP2)
- Herpesvirus latency active promoter
- Liver activating protien
- Lamin-associated polypeptides
- Leucine-rich repeat and a PDZ domain
- Laryngeal adductor paralysis