Proposed revisions to the nomenclature for Brachyspira membrane proteins and lipoproteins

The genus Brachyspira contains a number of species of commensal and pathogenic anaerobic intestinal spirochaetes that colonize human beings, animals and birds (Hampson & Stanton, 1997). With the rapidly growing interest in genome sequencing, proteomic analysis and vaccine development for these spirochaetes, new genes encoding novel Brachyspira membrane proteins and lipoproteins are becoming more frequently reported. The current nomenclature used for Brachyspira membrane proteins, lipoproteins and associated genes has developed in an ad hoc way and this has already caused some confusion with, for example, the same genes and proteins being given different names. Consequently, a revision to the current nomenclature is proposed and a simple set of guidelines for naming new membrane proteins, lipoproteins and their genes is described.

First, it is important that the Brachyspira species of origin be identified. For Brachyspira hyodysenteriae genes and proteins, their names should commence with ‘bh’, whilst for Brachyspira pilosicoli their names should start with ‘bp’, and so on for the various Brachyspira species. It would also be useful to distinguish between membrane proteins (mp) and lipoproteins (lp) in the names. Functional designations would be useful, but unfortunately these are largely unavailable. The use of an alphabetical designation to indicate the chronology of discovery has some advantages, but we suggest that it would be more descriptive and less contentious to use the molecular mass of the associated protein. Where proteins of similar mass are present, these could be designated further by using an alphabetic listing. In this way, the currently identified gene smpA (also cited as bmpA) encoding a 16 kDa lipoprotein of B. hyodysenteriae, designated SmpA (Thomas & Sellwood 1993) or BmpA (Lee et al., 2000), would be redesignated bhlp16, encoding lipoprotein Bhlp16. In the same way, bmpB (also cited as blpA) encoding a 29–7 kDa B. hyodysenteriae lipoprotein designated BmpB (Lee et al., 2000) or BlpA (Cullen et al., 2003) would be redesignated bhlp29.7, encoding Bhlp29.7. As this gene forms part of a locus of four related genes (Cullen et al., 2003), the associated genes would be designated bhlp29.7a, bhlp29.7b, etc. The vspa–H genes encoding a series of variable surface proteins of 39 kDa in B. hyodysenteriae (Gabe et al., 1998; McCaman et al., 1999, 2003) would be reassigned as bhmp39a, bhmp39b, etc. Similarly, the nomenclature for B. pilosicoli proteins should follow the same pattern. In this way the mglB gene encoding a 35 kDa outer-membrane lipoprotein of B. pilosicoli designated MglB (Zhang et al., 2000) would be redesignated bplp35, encoding Bplp35. The recently described bmpC gene in B. pilosicoli encoding a 23 kDa outer-membrane lipoprotein designated BmpC (Trott et al., 2004) would become bplp23, and the lipoprotein Bplp23. This proposed new system should make it easier to keep track of the rapidly expanding catalogue of membrane proteins and lipoproteins that is being described in the various Brachyspira species.

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