

Channel size and oligomeric constitution of the *Borrelia burgdorferi* P66 porin

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Borrelia species are obligate parasites transmitted to mammals by ticks. *Borrelia* have limited biosynthetic capacity and, therefore, they are dependent on nutrients provided by their hosts. The first step of nutrient availability is accomplished by water-filled channels, so called porins, across the outer membrane of these bacteria. P66 is so far the best studied porin in *Borrelia* showing dual function, acting not only as a porin but also as an adhesin. P66 form pores in planar lipid bilayers with a conductance of 11 nS in 1 M KCl which is an atypical and rare high single channel conductance for Gram-negative bacterial porins. Previous estimations of P66 channel diameter led to a diameter estimation of 2.6 nS. This calculation of the P66 channel diameter was based on the assumption that the conductance of the channel is equal to the conductivity of a simple cylinder of aqueous salt solution. Therefore, the calculated value of the P66 diameter appears to be somewhat preliminary and its apparent size and structure remain unclear. An applied method using nonelectrolytes with known hydrodynamic radii was used to calculate the real diameter of P66. This method should provide a more accurate estimate of the P66 channel diameter using a biophysical approach.