

Chapter 12
Web Text Box 1

Porin is also called VDAC

We use the name porin to refer to the channel in the outer mitochondrial membrane that lets through all ions and molecules of $M_r < 10,000$. We have stuck with this name, which is somewhat old fashioned, because the current name “Voltage-dependent anion channel” or VDAC is misleading. VDAC is not an anion-selective channel in the way that the GABA receptor (book page 273) or CFTR (book page 331) are. VDAC lets through positively charged ions and uncharged molecules perfectly well, although it shows a slight preference for anions. The description “voltage-dependent” refers to the finding that when studied by lipid bilayer voltage clamp (book page 332) VDAC was found to be open all the time if the voltage difference across the membrane was 20mV or less but began spending more and more of its time in a closed state if the voltage difference was increased (in either direction). Extrapolating the results, the channel would be expected to be shut all the time if the voltage difference across the mitochondrial outer membrane reached 80mV. Since there is no reason to suppose that there is any significant voltage across the mitochondrial outer membrane, the biological relevance of VDAC’s voltage dependence is unclear.

For an excellent review on VDAC/porin, see Shoshan-Barmatz et al. 2010. *Mol Aspects Med*, 31:227.