

# A low conductance, non-selective cation channel from human placenta

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Non-selective cation channels have been identified in the plasma membranes of many different cells. Previous research using fluorescent techniques has demonstrated the presence of cation conductances in membranes from human trophoblast. The purpose of this work was to explore, by electrophysiological methods, a non-selective cation channel in apical membranes from human placenta. Human placental apical membranes were purified by differential centrifugation and reconstituted in giant liposomes. These giant liposomes were then used for electrophysiological studies and were probed for the presence of cation channels by the patch-clamp method. The channel identified had a linear current-potential relationship with a conductance of around 16 pS in symmetrical Na solution. Under asymmetrical conditions the reversal potential was close to the reversal potential for Na<sup>+</sup>. The channel was equally permeable to sodium and potassium and the permeability sequence was NH<sub>4</sub><sup>+</sup> > Cs<sup>+</sup> ? Rb<sup>+</sup> > Na<sup>+</sup> ? K<sup>+</sup> > L