On the transmembrane voltage induced on ellipsoidal cells.

Wachner, D., Gimsa, J., 2001. *In* S. Grimnes, O. G. Martinsen, H. Bruvoll (Eds.): Proceedings of the XI international conference on electrical bio-impedance. 169–172, University Oslo, Oslo. ISBN 82-91853-05-3. XI international conference on electrical bio-impedance, 17.-21. June. Oslo, Norway.

Abstract: *We present an analytical equation for the transmembrane voltage (Δψ) of cells of the general ellipsoidal shape oriented in a homogenous AC field. Assuming an infinitely thin membrane the cell as well as the cytoplasm possess the same shape and must therefore exhibit effective constant fields. From these fields, the potentials at the internal and external side of the membrane can be calculated. A finite element model was applied to obtain the cytoplasmic and the effective local field of the cell. Our Δψ equation depends on external field frequency, geometrical and electrical cell properties, like cell shape and size, membrane capacitance and conductance, external and cytoplasmic conductivity as well as on the location of the membrane site.*