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## Malignant hyperthermia: the motor unit potential (MUP) predicts susceptibility to developing the MH syndrome

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**M**ating MH positive pigs to MH positive pigs produces an F1 generation that is highly stress susceptible. Recording the MUP shows MH + pigs have a higher U voltage than control pigs. Older MH+ pigs have an even higher U voltage than control pigs. The duration of the voltage spike is also increased in MH+ pigs versus control pigs and older MH+ pigs have even a longer duration of the voltage spike. We can assume that by concentrating the MH genetic defect in the F1 generation that the population of defective sodium channels in the acetylcholine receptor was present at a high concentration. Since the acetylcholine receptors are spatially located under the foot piece of the myoneural junction which makes them a bank of receptors that are readily

accessible when acetylcholine is released by the nerve, and the action of acetylcholine is very rapid. Therefore, the electromyographic data reflects the genetically defective sodium channels as the major functional component when we recorded the data. The sodium channels can be likened to a low voltage switch in a telephone circuit that is used to route telephone calls. We would suggest that the sodium channel at the acetyl choline receptor has been adapted to produce heat as well as muscle contraction and that the ability to produce copious amounts of heat is the biological mechanism that differentiates warm blooded animals from cold blooded animals.

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