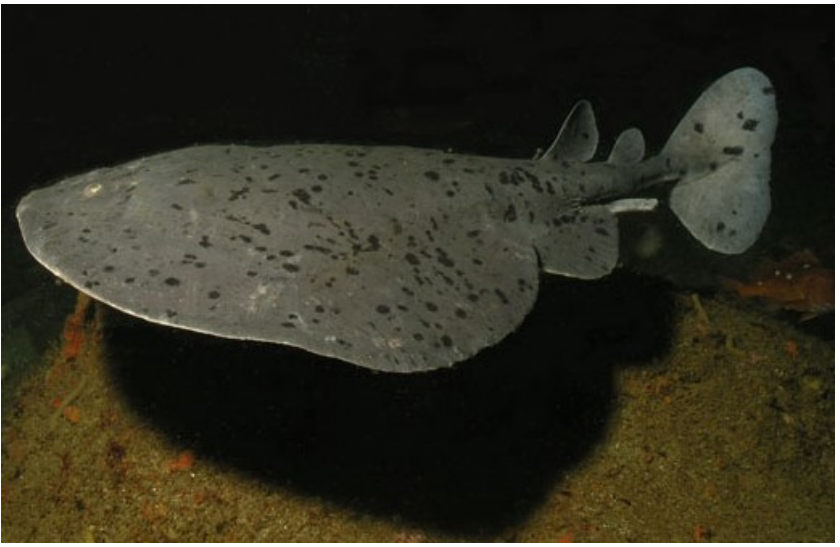
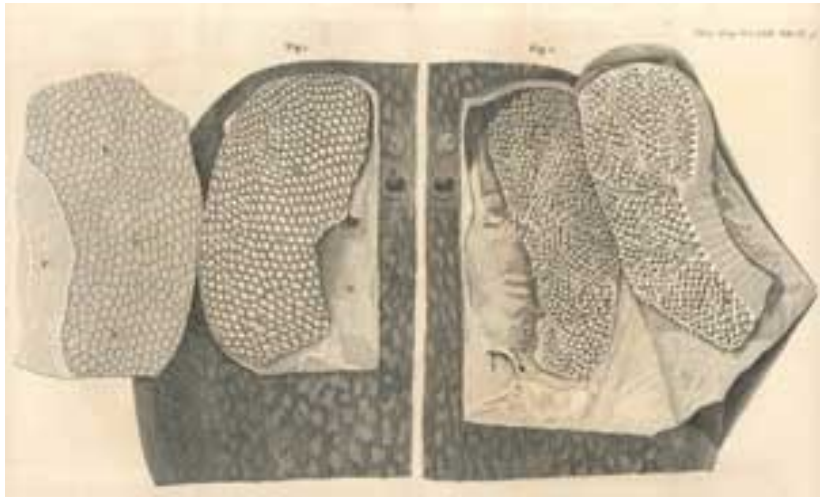
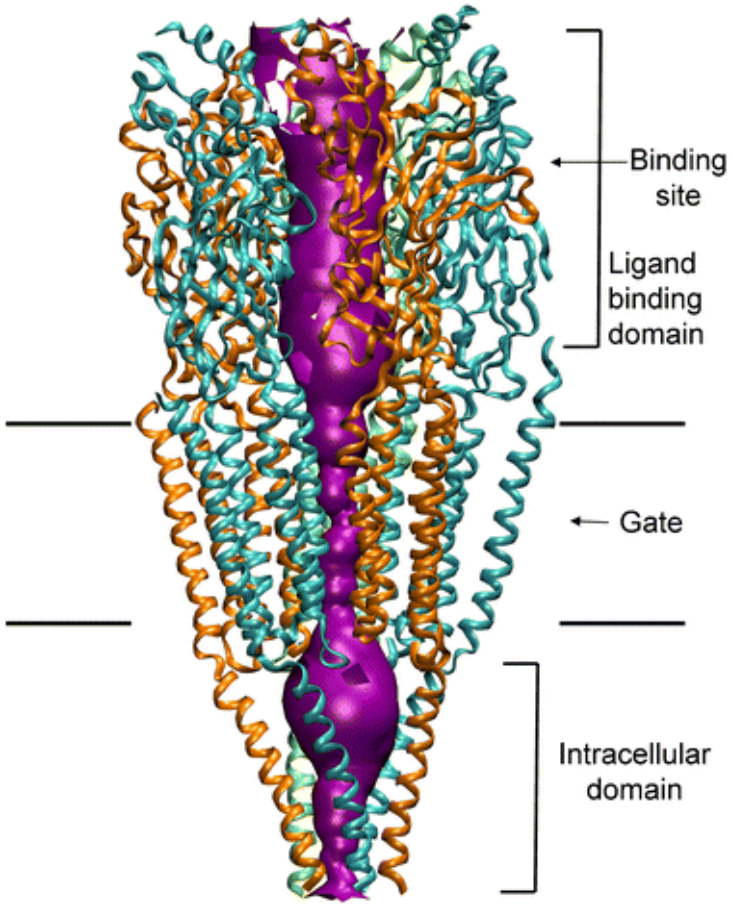
Myasthenia Gravis







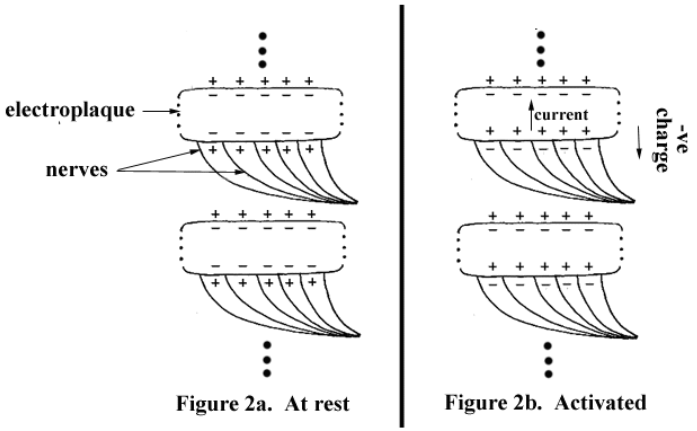
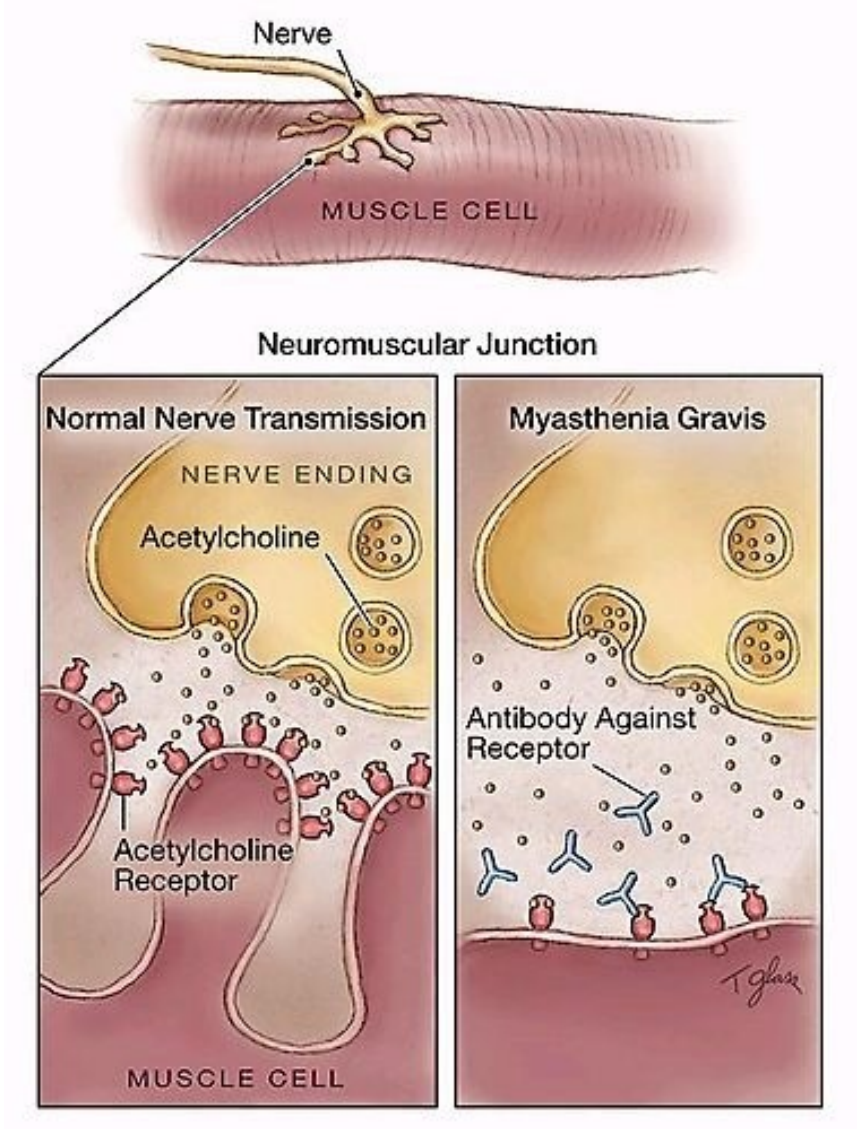


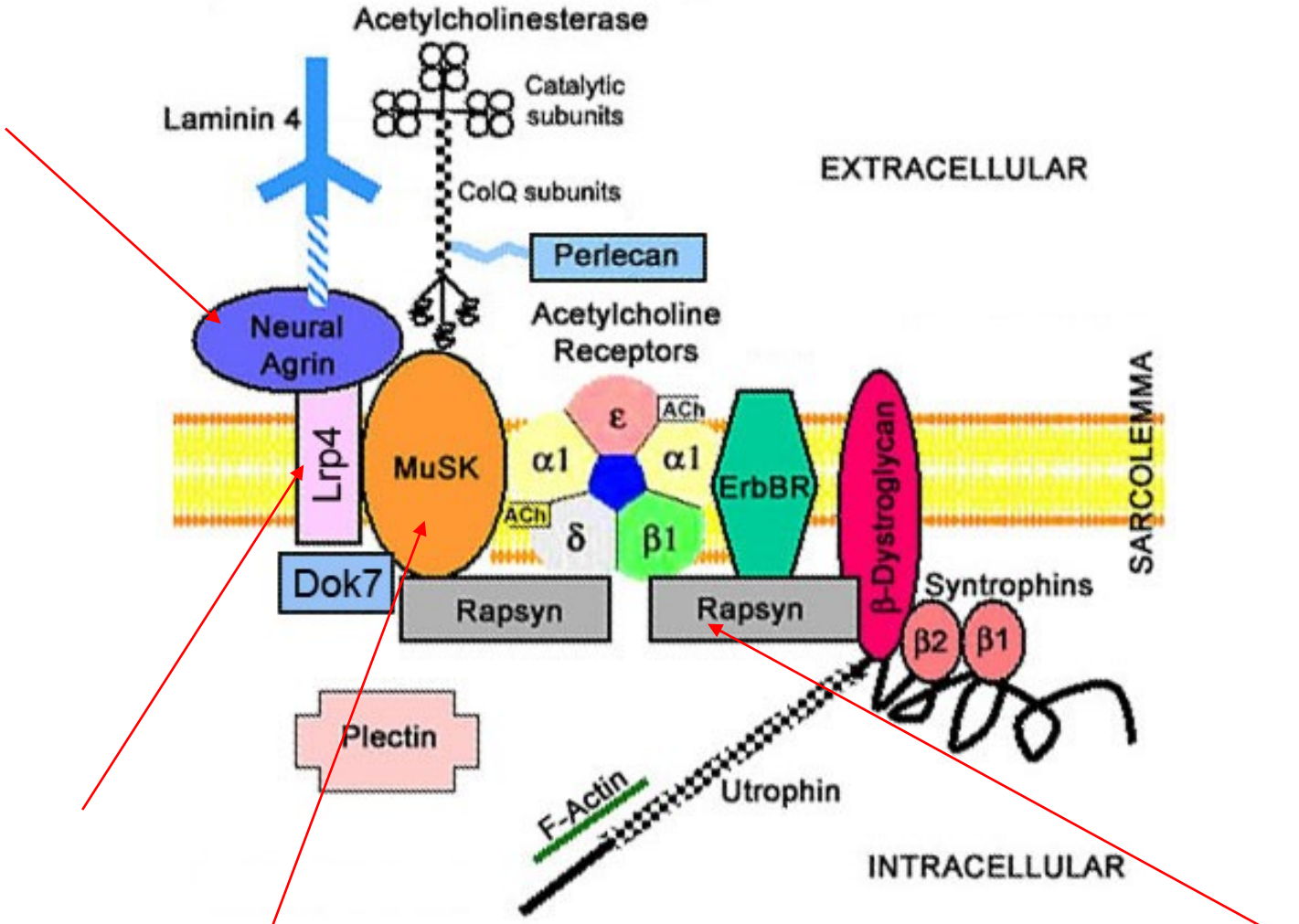
Figure 2a. At rest

Figure 2b. Activated

http://www2.mrc-lmb.cam.ac.uk/group-leaders/emeritus/nigel-unwin/

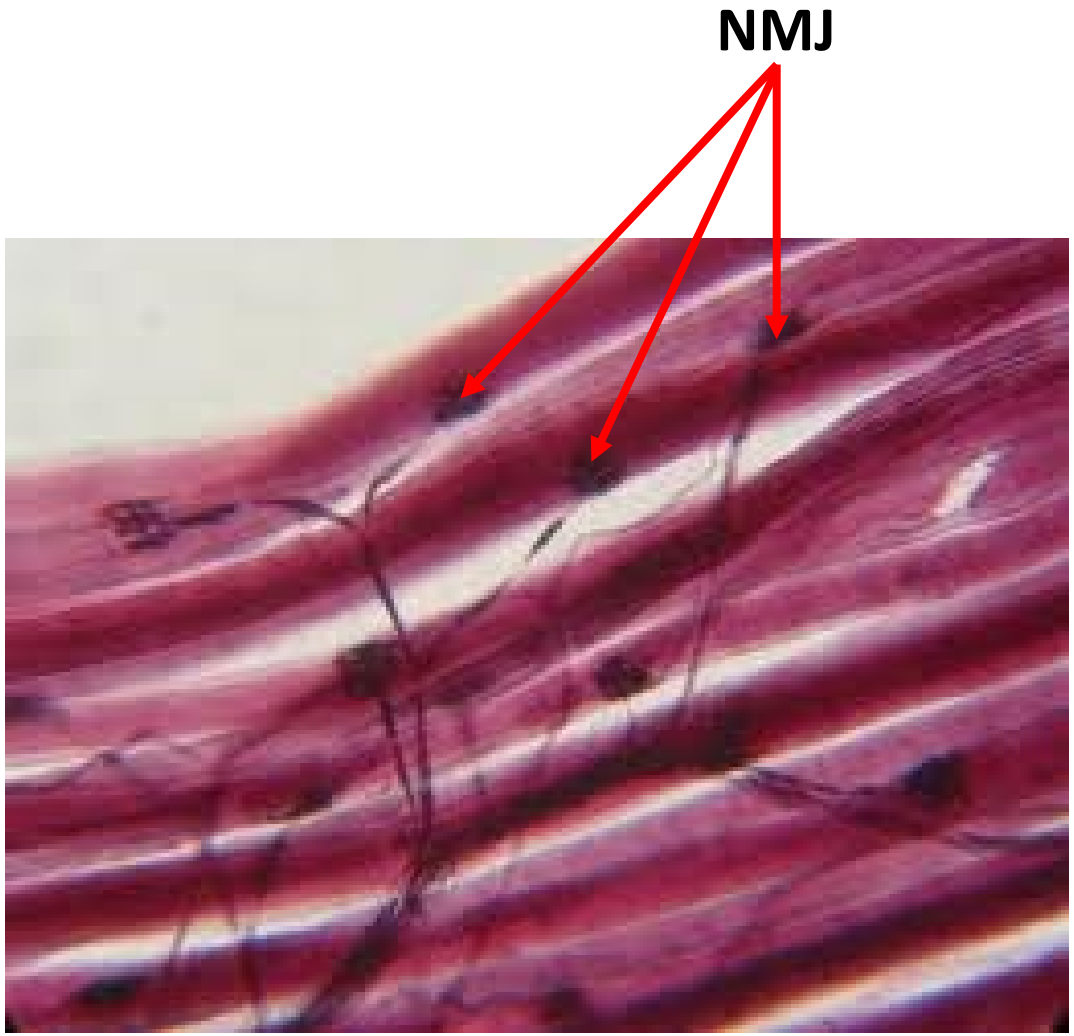
Myasthenia Gravis



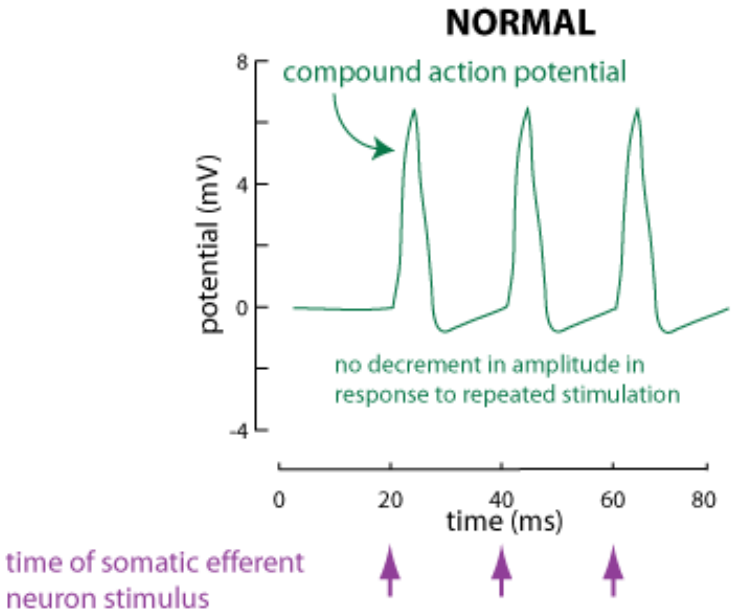


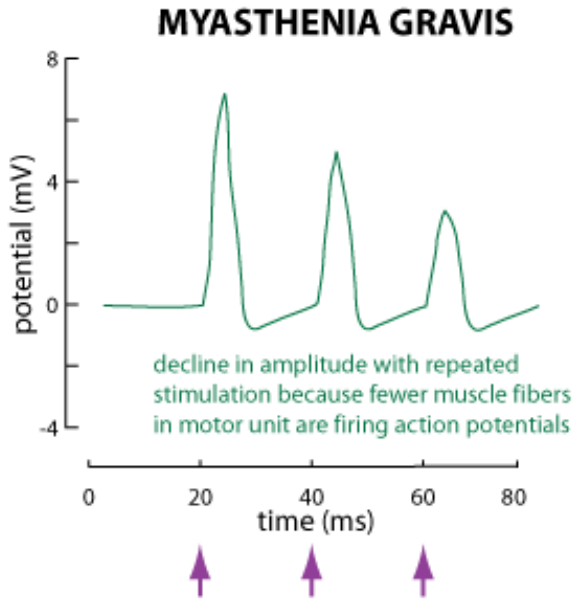
http://neuromuscular.wustl.edu/musdist/dag2.htm

Myasthenia Gravis



Histologyworld.com

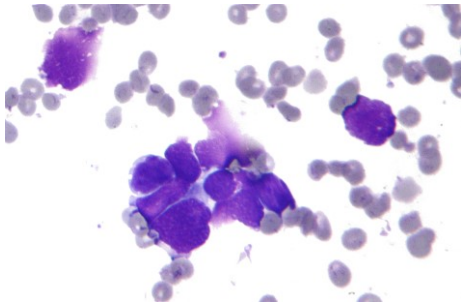




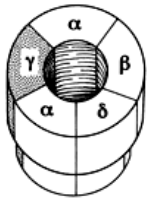
Other Myasthenic Syndromes

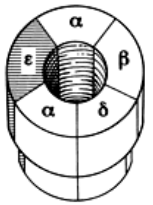
Congenital Myasthenic Syndromes:
Arise from mutations in genes that code for critical components of NMJ
-Change function, trafficking or modification of proteins required for proper function

Lambert-Eaton Myasthenic Syndrome:
Often associated with certain forms of cancer (~60% with SCLC)
Autoantibodies produced against many components of the NMJ



Neonatal Myasthenia Gravis:
Maternal antibodies targeting the γ-subunit of the fetal nAChR
Typically abates as ε replaces γ-subunits in mature nAChRs,
but can produce muscular development delays





Group Activities

1. Treatments for MG and Myasthenic Syndromes
2. Case Study

Treatment for Myasthenia Gravis

- Acetylcholinesterase Inhibitors

  Physostigmine, Donepezil, Rivastigmine

- K^+ Channel Blockers

  4-aminopyridine; 3,4-diaminopyridine

- Immunosuppresants

  Cyclosporin, Prednisone

- Plasmapharesis

- Thymectomy

Choose 2 or more treatment options and describe:

1. How it works to reduce symptoms
2. If it would work for MG as well as congenital syndromes

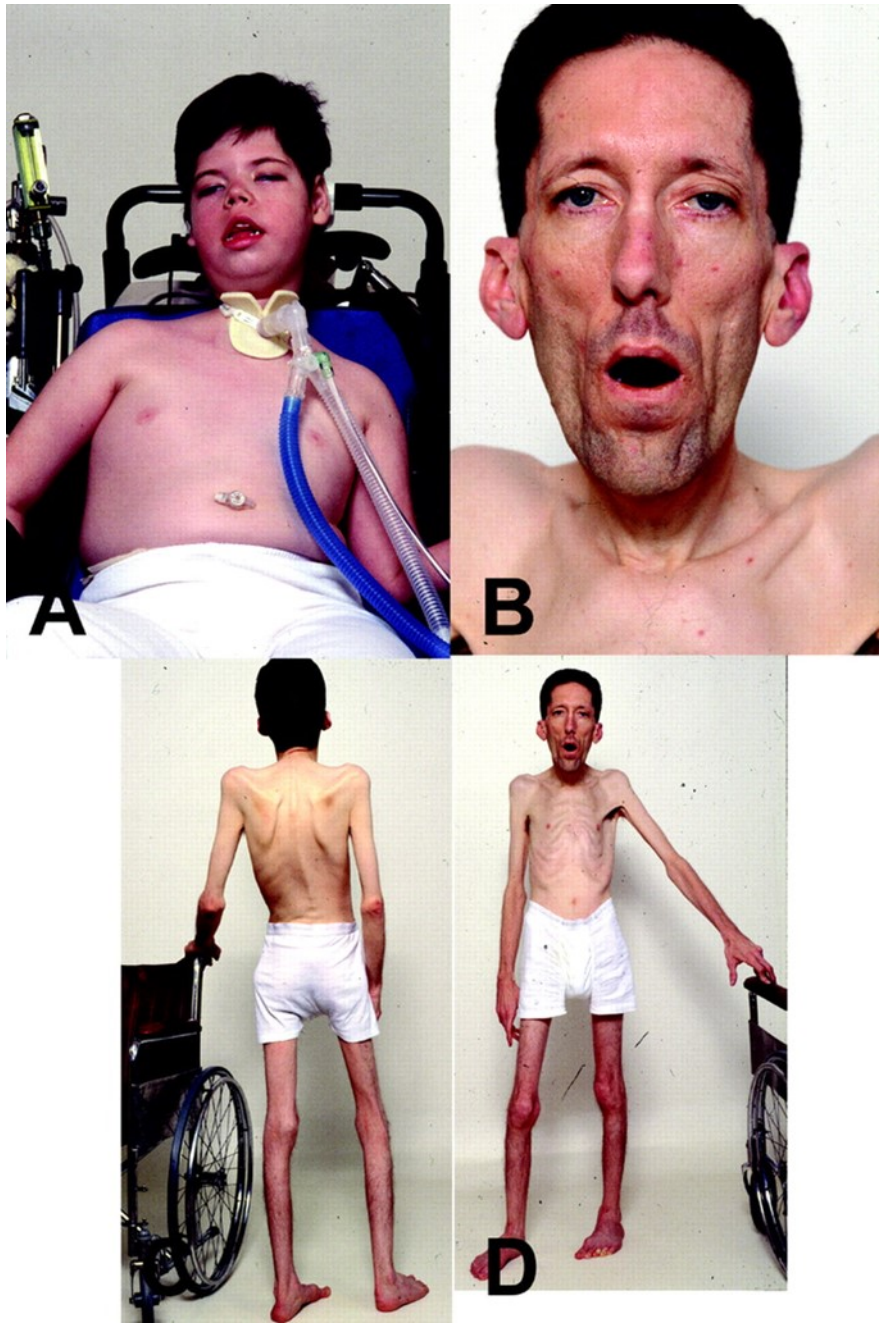
Case Study

From Milone et al, Neurology, 66; 2006

Patient 1 (A):
Age 7, has required artificial ventilation since birth
Severe weakness in all skeletal muscles, no tendon reflexes
Anti-nAChR antibody test is negative

Patient 2 (B,D):
Age 44, muscle weakness progressed since age 2,
wheelchair-bound since age 10
Anti-nAChR antibody test is negative

In both cases, parents and siblings are unaffected



With what you know about Myasthenic Syndromes and synaptic neurotransmission at the NMJ, suggest 2 or more potential proteins that could be involved in the pathology of these patients and explain why.