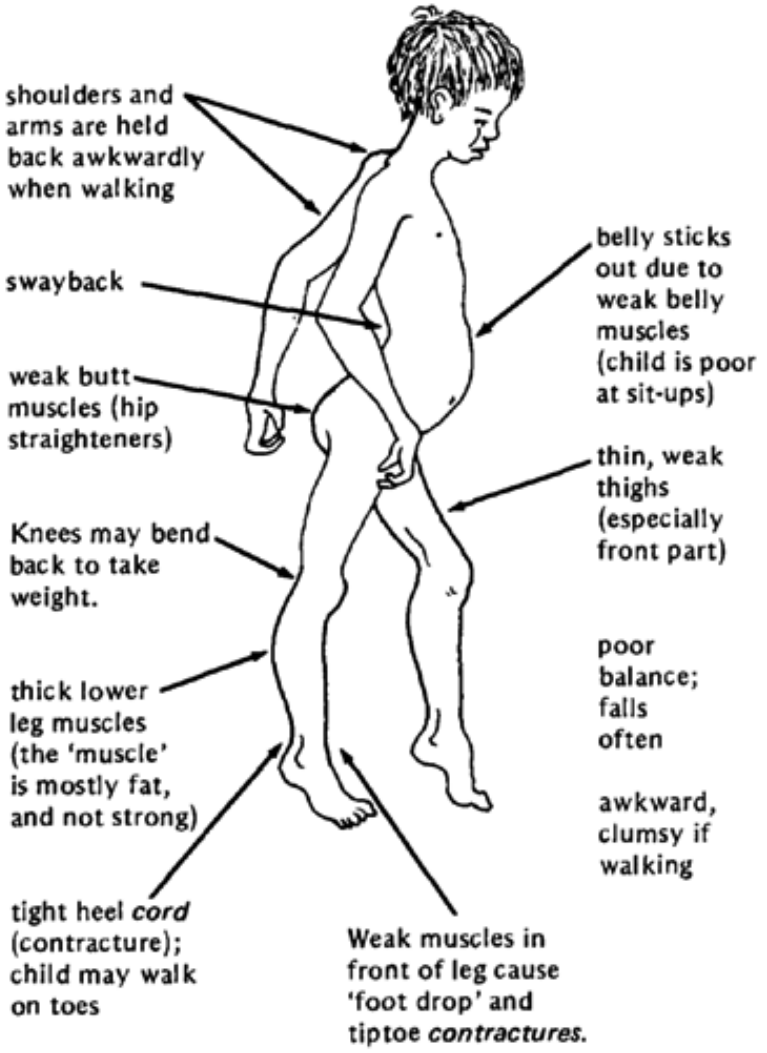
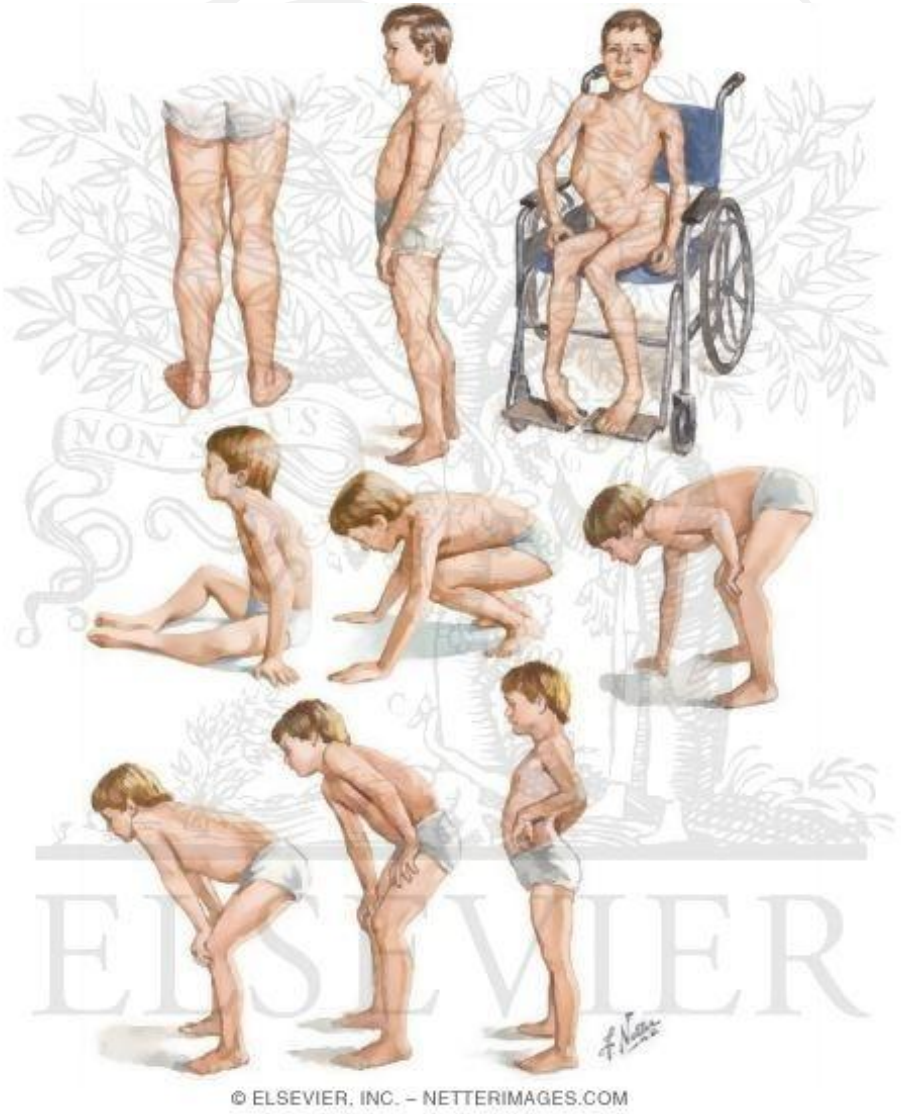
Duchenne Muscular Dystrophy

Manuela Richter

DMD


shoulders and arms are held back awkwardly when walking
swayback
weak butt muscles (hip straighteners)
Knees may bend back to take weight.
thick lower leg muscles (the 'muscle' is mostly fat, and not strong)
tight heel *cord* (contracture); child may walk on toes
Weak muscles in front of leg cause 'foot drop' and tiptoe *contractures.*
belly sticks out due to weak belly muscles (child is poor at sit-ups)
thin, weak thighs (especially front part)
poor balance; falls often
awkward, clumsy if walking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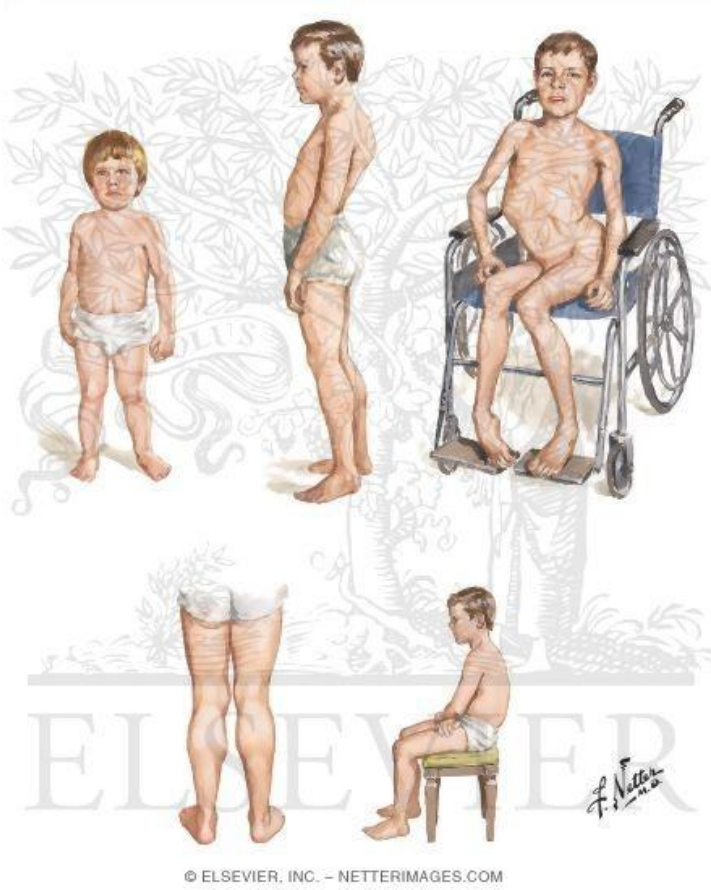
Pre-Genetic Diagnosis

- onset by 5 years old
- in wheelchair by 12
- rapidly progressive
  - begins in pelvic/thigh region
- lack of dystrophin
  - instability in muscles
  - muscle tissue replaced by adipose or fibrous tissue
- motor difficulties
- enlarged calves

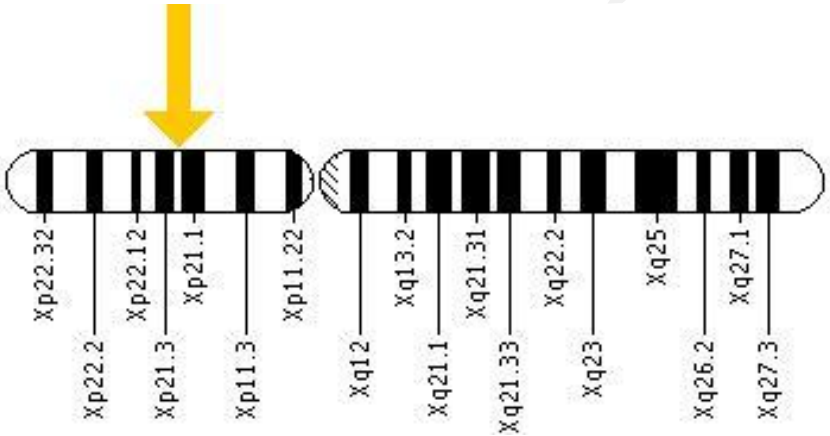


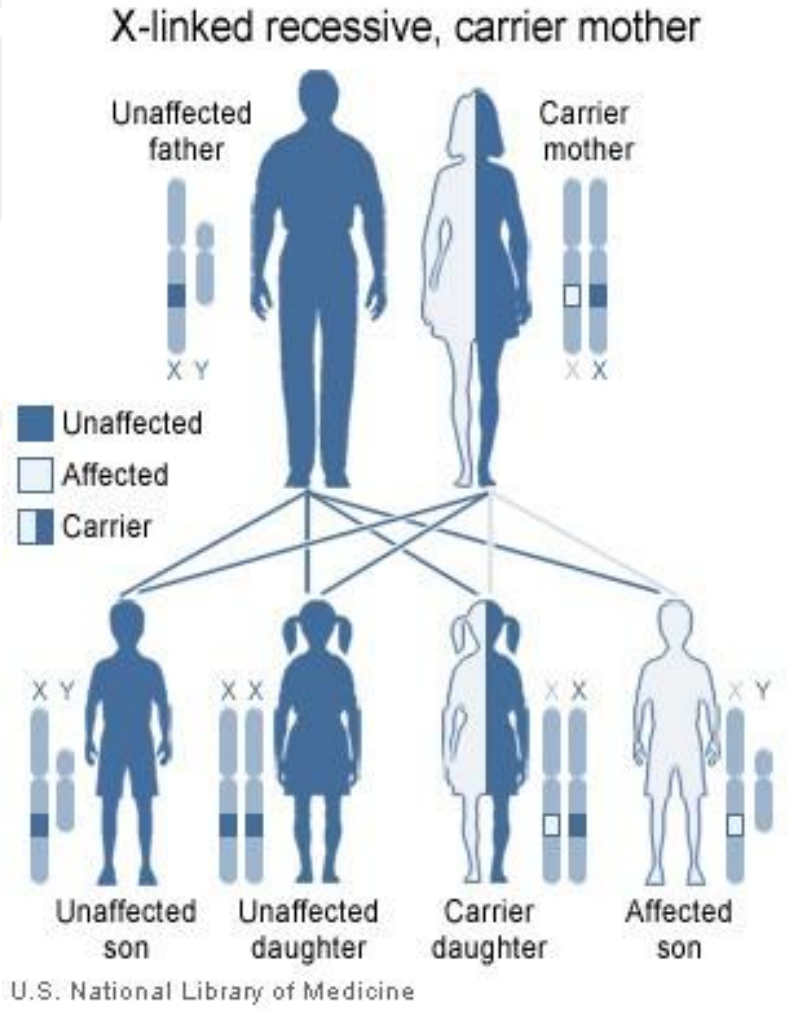
Pre-Genetic Treatment

- Slowing progression
  - steroids
- Physical therapy
- Treating complications
  - ventilation, wheelchairs

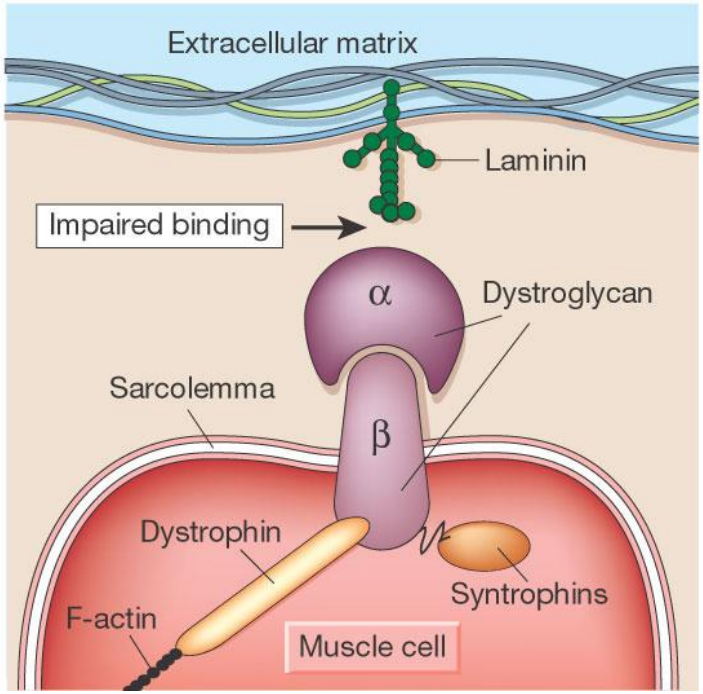
Genetics

- Mutation in dystrophin gene
- X linked recessive
- 1 in 3600 boys
- worldwide, all races





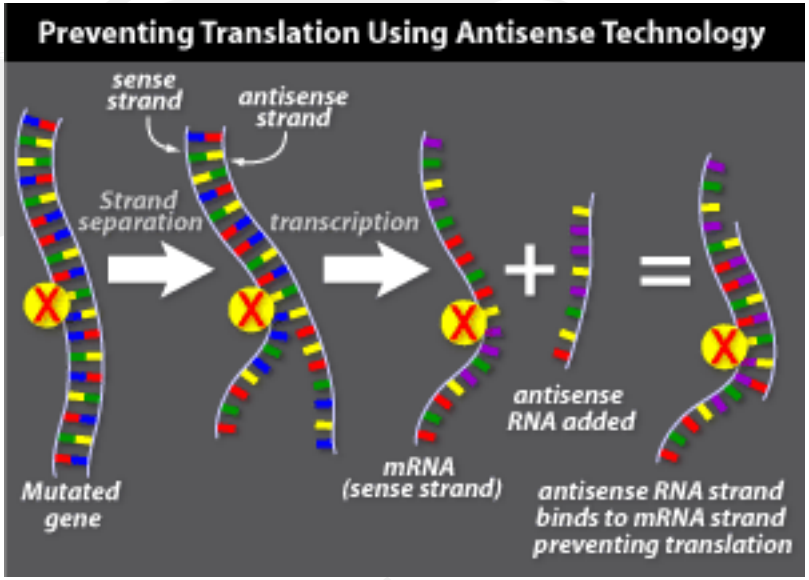
Genetic Diagnostics



- DNA testing
  - searches for specific, known dystrophin mutations
- Muscular biopsy
  - tests for presence of dystrophin
- Prenatal testing
  - mutation in another family member is known

Genetic Research

- Stem Cell Replacement
  - muscle satellite cells
- Premature stop codon
  - PTC124
  - aminoglycosides
  - ~15% DMD patients
- Gene Therapy
  - rAAV6 vectors



- Exon-skipping
  - AON's "turn off" mutations in dystrophin gene
  - being tested in humans

Video Clip

http://www.youtube.com/watch?feature=player_detailpage&v=KA8W5UfE4ts#t=138s