Porcine stress syndrome
(PSS, Malignant hyperthermia)

Presentation:
- Sudden death in several pigs during periods of stress (transport, hot days, handling)
- Muscle stiffness, rapidly increasing temp (up to 113°F (45°C)) and CO₂ in a pig during inhalant anesthesia
- Metabolic and respiratory acidosis, red mottled skin
- Mostly heavily muscled pig breeds

Test of choice:
- Genetic testing now supersedes other diagnostics
- History and clinical signs (esp. w/ anesthesia)
- Creatine kinase levels elevated

Rx of choice:
- Stop inhalant anesthesia or procedure
- IV dantrolene
- Body cooling
- IV fluids

Pearls:
- Hypermetabolic syndrome of skeletal muscles
  - Uncontrolled Ca++ release from sarcoplasmic reticulum in myocytes -> muscle contraction
  - Muscle metabolism goes crazy – producing heat, lactate, CO₂, and acidosis
- Mutation usually at ryanodine receptor on Ca++ channels of sarcoplasmic reticulum
  - Autosomal recessive in pigs
  - Autosomal dominant in dogs, horses
- Pss has been bred out of most production breeds, but still occasionally seen
- Muscles are pale, soft, exudative (PSE) – commonly used terminology

Classic Question(s)

What is the underlying cause of malignant hyperthermia?

What are the clinical signs of porcine stress syndrome?

How do you treat malignant hyperthermia in an anesthetized pig?

How is anesthesia linked with porcine stress syndrome?