



**G6P:** glucose-6-phosphate

**PDH:** pyruvate dehydrogenase

**Ile:** isoleucine

**ISDH:** isocitrate dehydrogenase

**ATP:** adenosine triphosphate

**PKa:** phosphorylase kinase a

**BCAA:** branched-chain amino acids

**Val:** valine

**αKGDH:** α-ketoglutarate dehydrogenase

Fast twitch (Type 2) fibers (white) use anaerobic glycolysis, glycogen

Slow twitch (Type 1) fibers (red, myoglobin) use oxidative metabolism, β-oxidation, fatty acids

Recall cAMP → protein kinase A → phosphorylase kinase a (Ca<sup>2+</sup>-dependent) → phosphorylase a → glycogen breakdown

Ca<sup>2+</sup> regulation of PDH involves activation of PDH phosphatase, which increases the amount of active PDH (the dephosphorylated form)

# Review Questions

- **How does muscle produce ATP (carbohydrates, fatty acids, branched-chain amino acids)?**
- **What are the key  $\text{Ca}^{2+}$  regulated steps?**