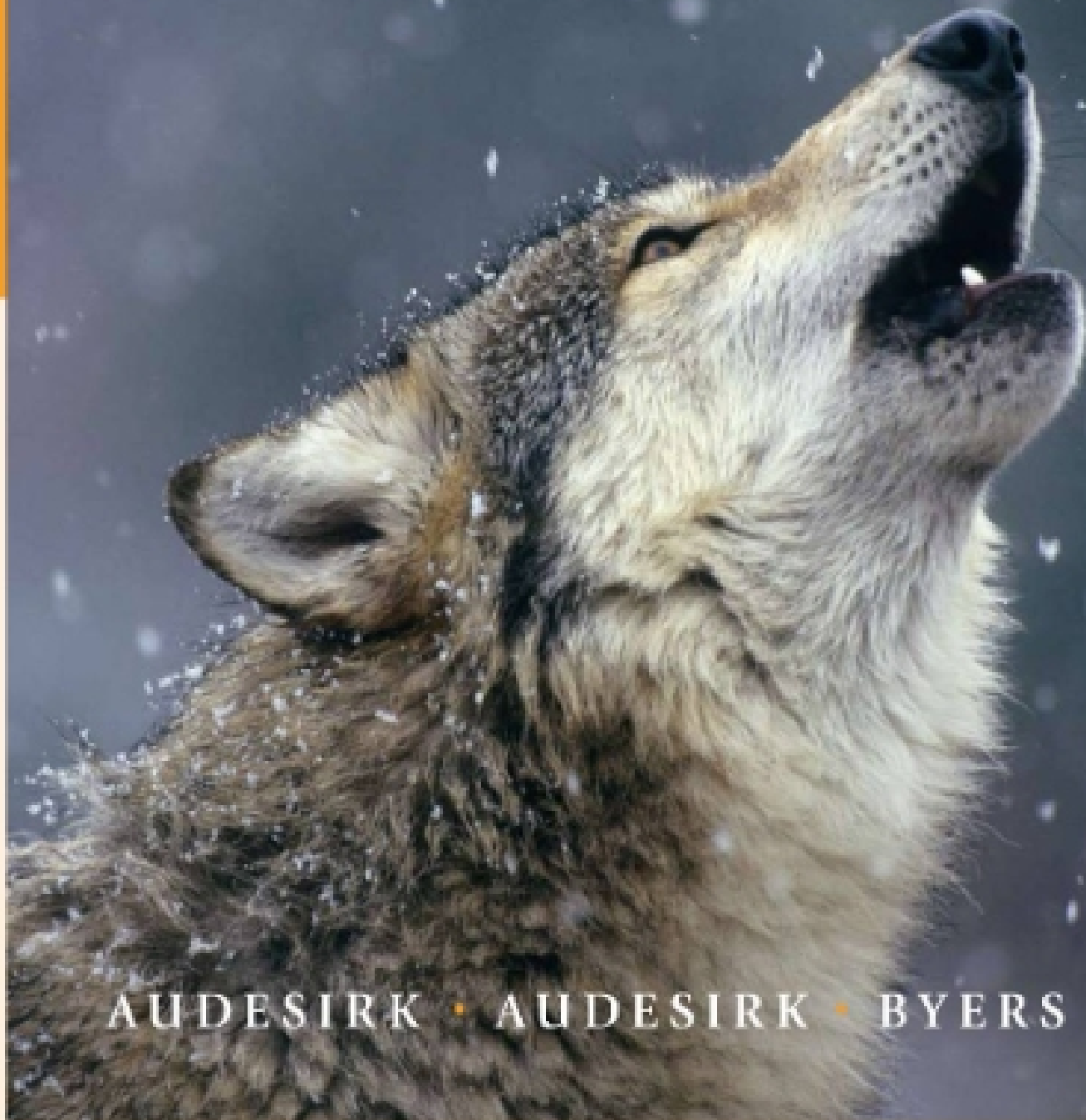


NINTH EDITION

BIOLOGY

LIFE ON EARTH



Chapter 40

Action and Support: The Muscles and Skeleton

Lecture Outlines by Gregory Ahearn,
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40.1 How Do Muscles and Skeletons Work Together to Provide Movement?

- Despite enormous differences in body form and structure, nearly all animals—jellyfish, earthworms, crabs, horses, and people—move using the same fundamental mechanism:
 - Contracting muscles exert forces on the structure that supports the body, called a skeleton, and cause the body to change shape
 - A body with its full complement of muscles, but no **skeleton**, would not have coordinated movement
 - A skeleton without muscles would remain in one position unless someone else moved it

40.1 How Do Muscles and Skeletons Work Together to Provide Movement?

- Muscles produce force by contracting
 - A muscle can only contract or not contract
 - Coordinated movement of an animal's body is produced by alternating contractions of muscles with opposing actions, called **antagonistic muscles**, which can make the digestive tract thinner or fatter, or move appendages back and forth