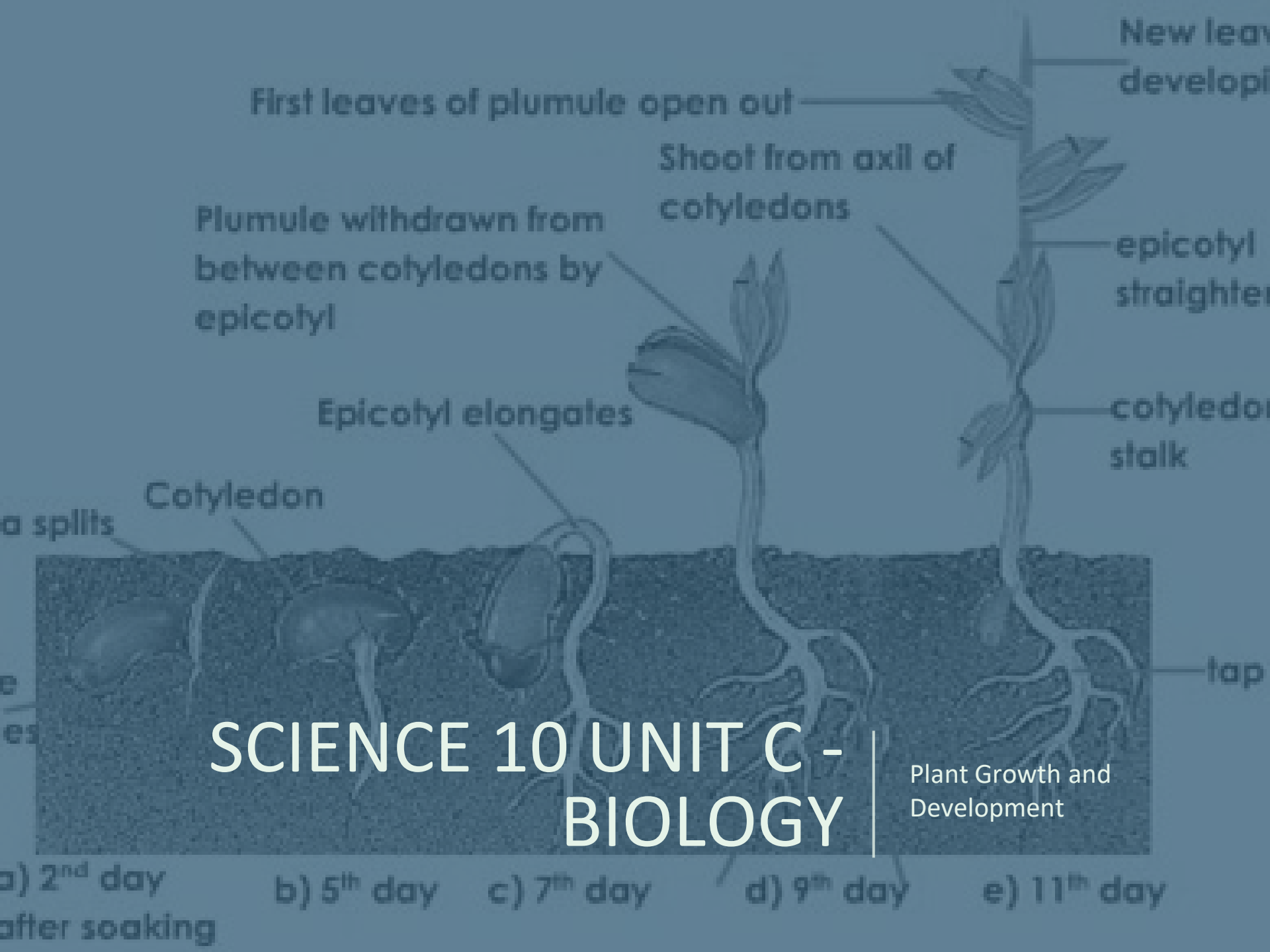


SCIENCE 10 UNIT C - BIOLOGY

Plant Growth and Development

KEY POINTS

1. Understand what factors influence plant growth
2. Learn what hormones are responsible for growth and development in plants
3. Understand that plant shape is not fixed, but a response to the environment

CONTROL OF PLANT GROWTH AND DEVELOPMENT

- Plants are rooted to one location for life
- They respond to their environment by adjusting their growth
- Means plants of the same species vary much more than animals

GROWTH PATTERNS: TROPISMS

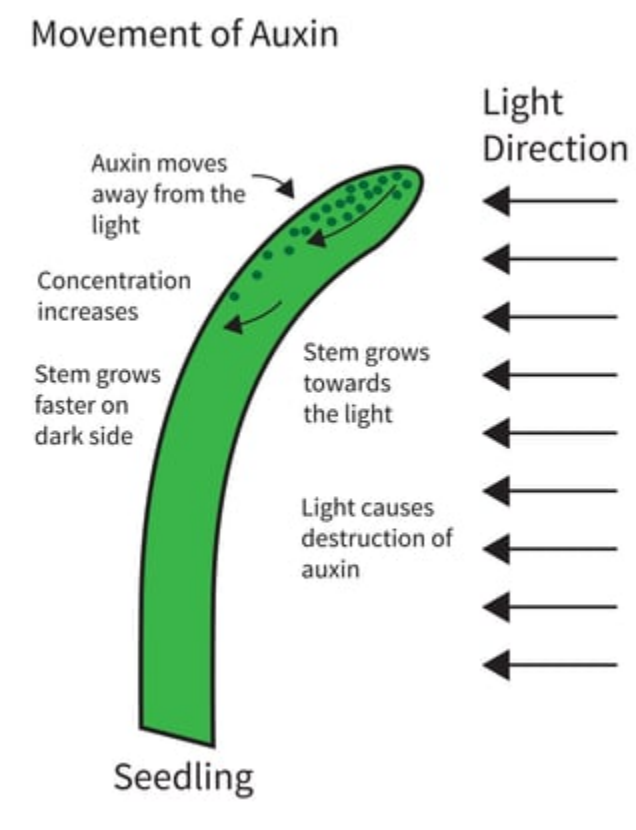
- **Tropisms** are growth responses that result in curvature of plants toward or away from stimuli
- It took years to learn why plants did this
- **Charles Darwin** observed that plants grow in response to stimuli like light and gravity, but did not explain why

GROWTH PATTERNS: TROPISMS

- In 1911, Peter **Boysen-Jensen** showed that tropism was due to movement of a substance, not physical pressure
- This paved the way for Nikolai **Cholodny** and Frits Warmolt **Went** to discover **auxin,** as **Cholodny-Went**

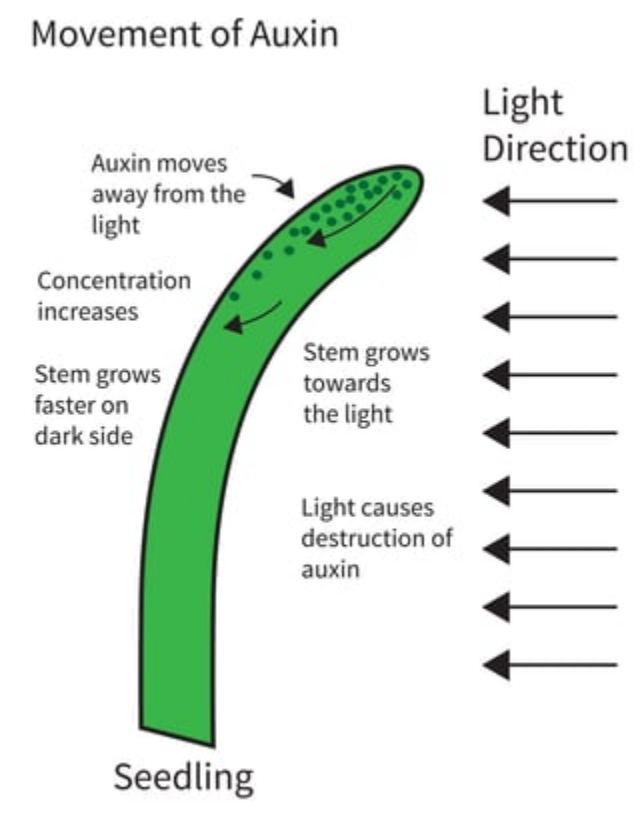
GROWTH PATTERNS: TROPISMS

- **Auxin** is the hormone that stimulates plants to grow
- By stimulating one side more than the other, it causes plants to **bend**
- It is responsible for the **three** kinds of tropism



PHOTOTROPISM

- Phototropism is the tendency of plants to bend **towards** light sources
- This is done because photosynthesis requires light
- The diagram shows how auxin causes this



GRAVITROPISM

- Gravitropism is the tendency of plants to bend **away** from gravity
- This is done because plants want to grow skyward for photosynthesis
- How might auxin cause this?

THIGMOTROPISM

- Thigmotropism is the tendency of plants to coil **around** a solid object
- This is done by viny plants like ivies to support their growth
- How might auxin cause this?