L.S COLLEGE, MUZAFFARPUR

Tracheal System in Insects

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INTRODUCTION

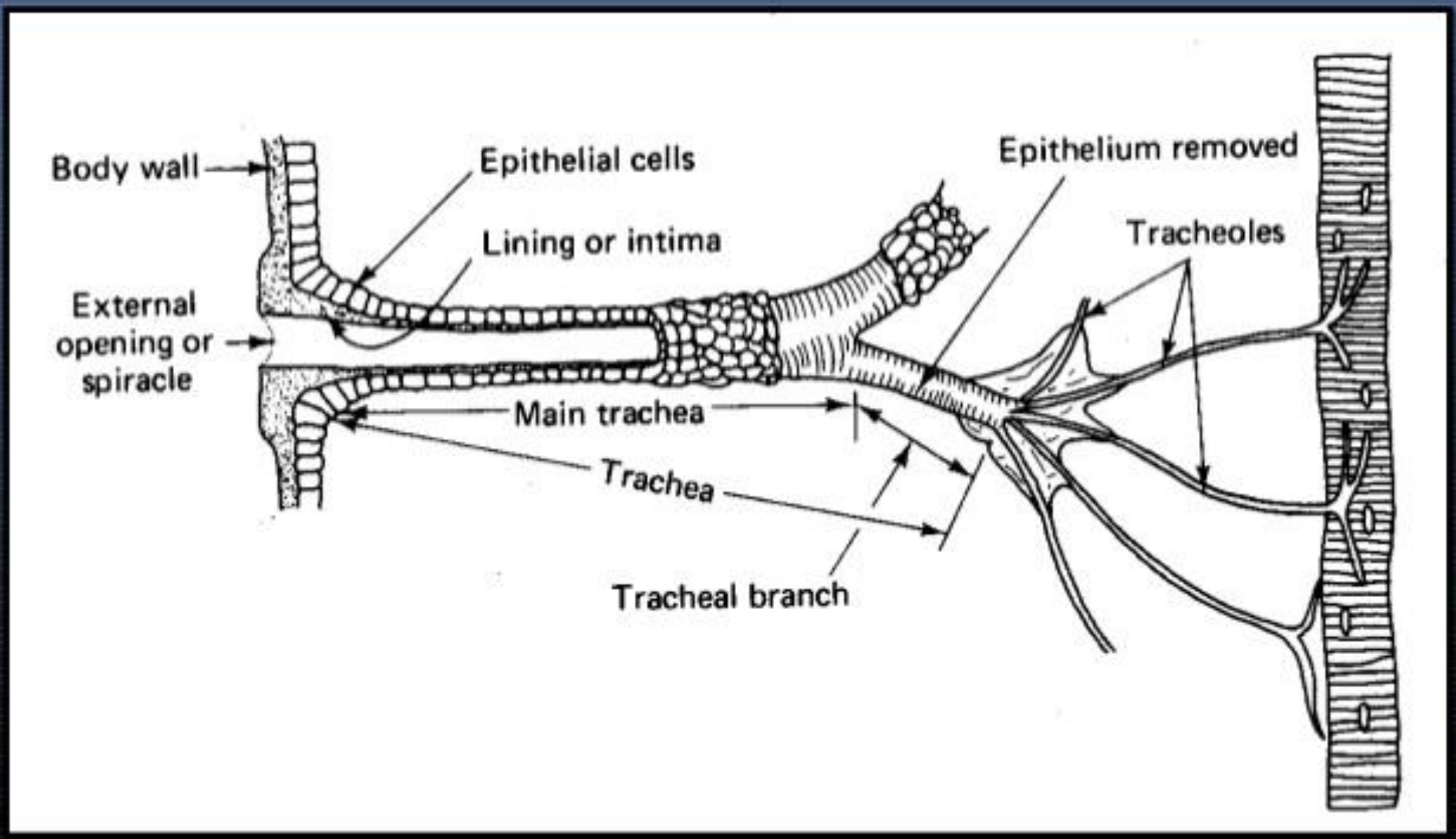
- An insect's respiratory system is the biological system with which it introduces respiratory gases to its interior and performs gas exchange.
- Air enters the respiratory systems of insects through a series of external openings called spiracles.

- These external openings, which act as muscular valves in some insects, lead to the internal respiratory system, a densely networked array of tubes called tracheae.
- This network of transverse and longitudinal tracheae equalizes pressure throughout the system.

Structure of the tracheae

- After passing through a spiracle, air enters a longitudinal tracheal trunk, eventually diffusing throughout a complex, branching network of tracheal tubes that subdivides into smaller and smaller diameters and reaches every part of the body.
- Oxygen in the tracheal tube first dissolves in the liquid of the tracheole and then diffuses across the cell membrane into the cytoplasm of an adjacent cell.

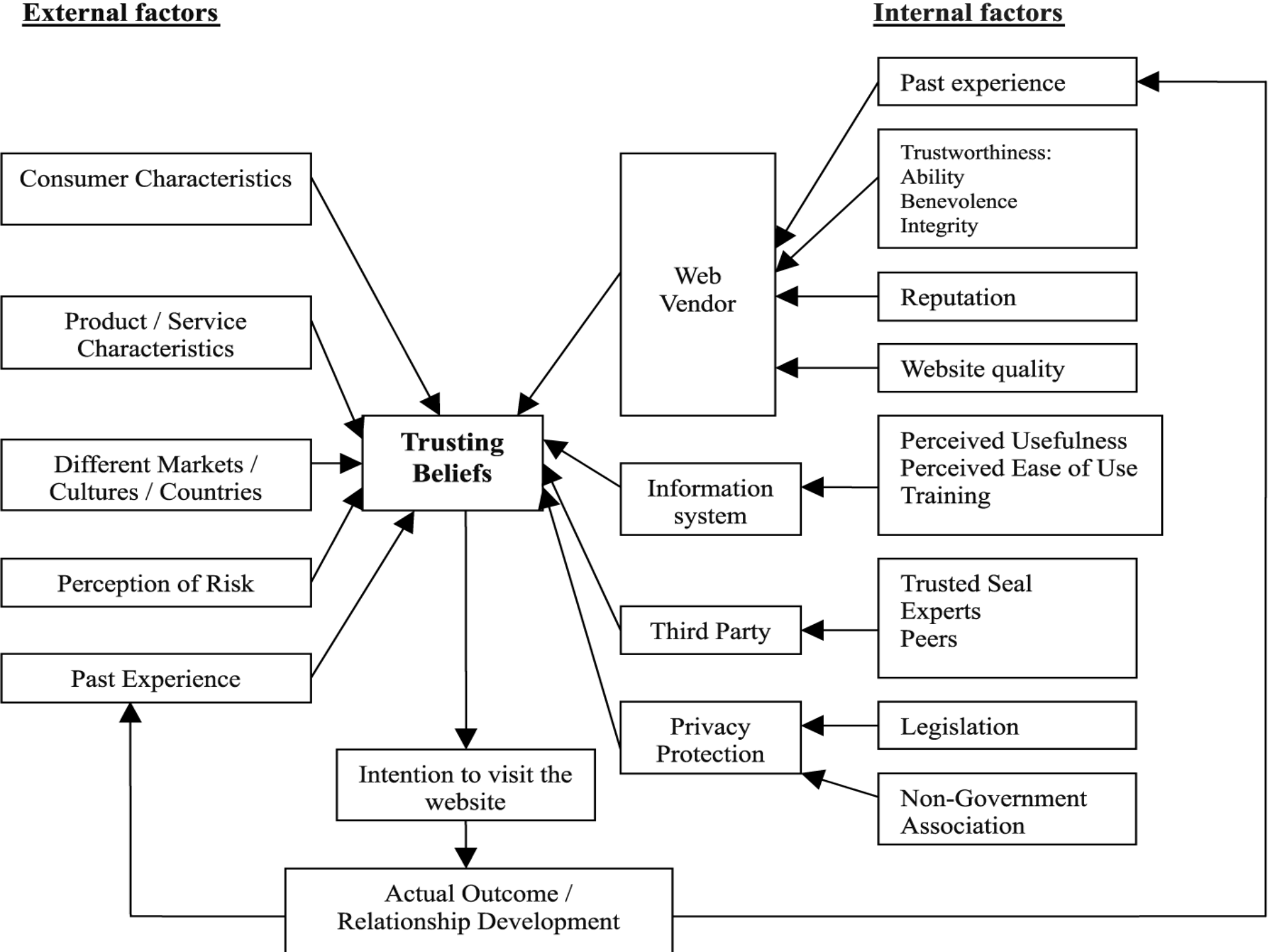
TRACHEAL SYSTEM OF RESPIRATION



- Periods in Earth's ancient history, however, such as the Carboniferous, featured much higher oxygen levels (up to 35%) that allowed larger insects, such as meganeura, along with arachnids, to evolve.

Theoretical models

- Insects were once believed to exchange gases with the environment continuously by the simple diffusion of gases into the tracheal system. More recently, large variation in insect ventilatory patterns have been documented, suggesting that insect respiration is highly variable.
- Some small insects do demonstrate continuous respiration and may lack muscular control of the spiracles.


External factors
Internal factors
Past experience
Consumer Characteristics
Trustworthiness:
Ability
Benevolence
Integrity
Web
Vendor
Product / Service
Characteristics
Reputation
Website quality
Trusting
Beliefs
Different Markets /
Cultures / Countries
Perceived Usefulness
Perceived Ease of Use
Training
Information
system
Perception of Risk
Trusted Seal
Experts
Peers
Third Party
Past Experience
Privacy
Protection
Legislation
Intention to visit the
website
Non-Government
Association
Actual Outcome /
Relationship Development

- Others, however, utilize muscular contraction of the abdomen along with coordinated spiracle contraction and relaxation to generate cyclical gas exchange patterns and to reduce water loss into the atmosphere.

Thank You