How are touch receptors distributed in the integumentary system?

Discussion

1) What were some strengths of the way you planned or carried out your investigation? (What made it scientific?)

2) What were some weaknesses of the way you planned and carried out your investigation? (What made it less scientific?)

3) What rules should we make in order to ensure that our next investigation is scientific?

4) The error in localization of the buccal region is 1.5cm and the error of localization of the acromial region is 4.2cm because there are more Meissner and Pacinian corpuscles in the buccal region. Is this an observation or an inference? Explain how you know.
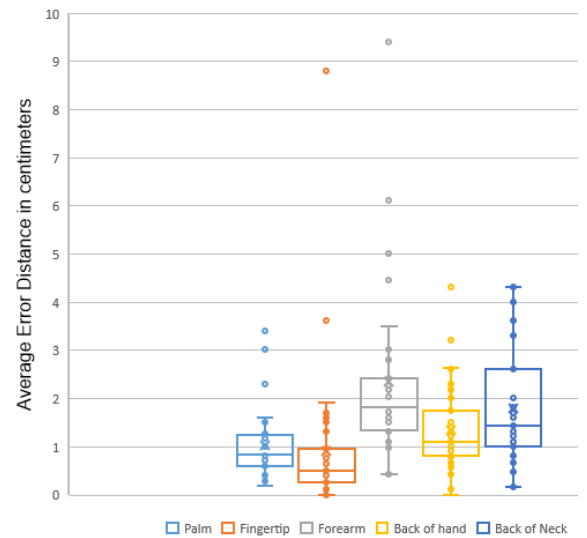
5) Label the box and whiskers plot below

6) Observations

Error in localization determination

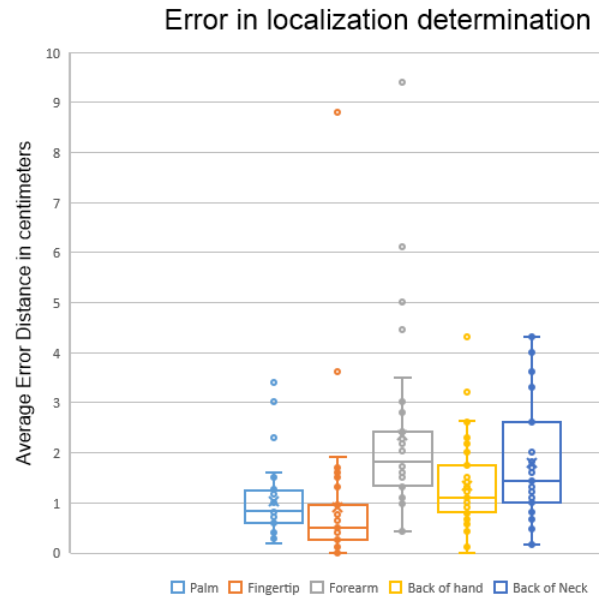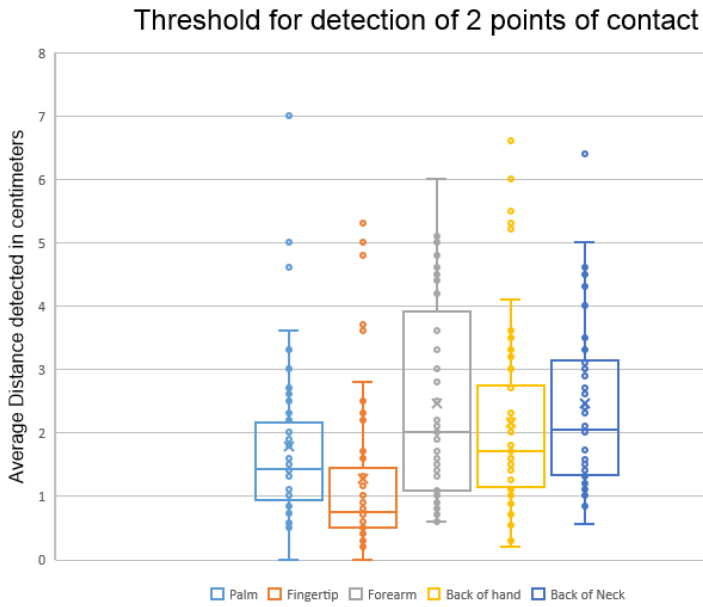7) How are the error in localization determinations similar and different?

8) Which area has the best detection?

9) Justify your answer. A justification has 3 components: 1) scientific knowledge or theory, 2) data from analysis related to the knowledge, and 3) an explanation of HOW the data supports the knowledge.

10) Which area has the worst detection?

11) Justify your answer. A justification has 3 components: 1) scientific knowledge or theory, 2) data from analysis related to the knowledge, and 3) an explanation of HOW the data supports the knowledge.

12) How are the different regions similar and different in two-point threshold determination and localization determination? You must justify your conclusions using specifics from the box and whiskers plots.

Threshold for detection of 2 points of contact

Average Distance detected in centimeters

☐ Palm ☐ Fingertip ☐ Forearm ☐ Back of hand ☐ Back of Neck

Error in localization determination

Average Error Distance in centimeters

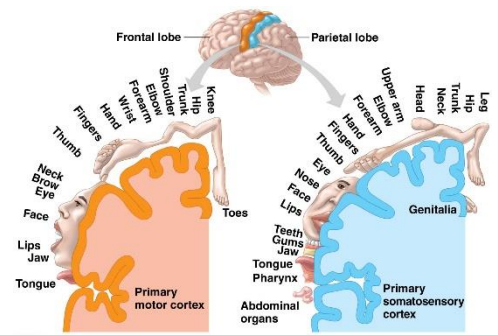☐ Palm ☐ Fingertip ☐ Forearm ☐ Back of hand ☐ Back of Neck

13) Which body regions are most sensitive?

14) How do you know?

15) Which body regions are the least sensitive?

16) How do you know?

17) Would it be possible to believe you have been touched in one area of your body while actually being touched in an area very distant from the area of perceived touching? **Explain** your answer.

18) What conclusions can you draw about our ability to detect cold, pain, etc., based on the human homunculus? Justify your response. A justification has 3 components: 1) scientific knowledge or theory, 2) data from analysis related to the knowledge, and 3) an explanation of HOW the data supports the knowledge.

19) How would a star nosed mole molunculus look? Justify your answer. A justification has 3 components: 1) scientific knowledge or theory, 2) data from analysis related to the knowledge, and 3) an explanation of HOW the data supports the knowledge.

20) Speculate about why animals devote different amounts brain real estate to different senses and areas of the body. Consider the evolutionary advantage of this fact.

21) How was the following demonstrated in this lab?

Patterns
- Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.
- Empirical evidence is needed to identify patterns.

22) How was the following demonstrated in this lab?

Cause and effect: Mechanism and Prediction

- Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.

23) How was the following demonstrated in this lab?

Structure and Function

- The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.