

MALE FEMALE

Age _____

How did you gain access to the University?:

University Entrance Exam - Qualification _____

Other ways - Please specify which _____

HISTOLOGICAL THRESHOLD CONCEPTS QUESTIONNAIRE (HTCq)

Threshold concepts are defined as those concepts or knowledge that, for a given discipline, present the following features:

1. They should be **transformative**, i.e. once understood, the student's perception and understanding of the discipline should change radically.
2. They should be **irreversible**, i.e. once well understood, students are unlikely to forget them.
3. They should be **integrative**, i.e. once well understood, they should connect and build bridges within and across disciplines.
4. They should be generally **troublesome** for students to understand.
5. They should be generally **bounded** for a discipline.

Please rate from 1 to 5 your level of agreement or disagreement that each of the following concepts can be considered a threshold concept for the learning of histology:

A- MORPHOSTRUCTURAL BASIC CONCEPTS

The concept of morphology

(Macroscopic and microscopic spatial configuration of a living organism or inert material and of the different units of which it is composed)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of structure

(A set of elements and the relationships that link them together without it being possible to characterize or define the elements independently of their relationships)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of microscopic structure

(Structure made up of microscopic elements and the relationships among them)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of the form-structure-function relationship

(Correlation between the morphological and structural characteristics of a microscopic entity and its functional activity)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

B- TISSUE ORGANIZATION CONCEPTS

The concept of cell

(Structural and functional unit of living organisms)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of cell population

(A group of cells of the same lineage or functional activity)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of tissue or associated cell population

(Supracellular level of organization formed by cells associated by juxtaposition or intercellular substances with a specific functional activity)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of dispersed cell population

(Supracellular level of organization made up of dispersed cells with a specific functional activity)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of extracellular matrix

(A set of fibrous and soluble molecules located in the intercellular space between the cells that form a tissue)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of stem cell as the basis for tissue renewal

(Stem cells are undifferentiated cells present in some tissues, with the capacity to self-renew and regenerate to form differentiated cells of one or more lineages, making tissue renewal possible)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

C- HIERARCHICAL BODY ORGANIZATION CONCEPTS

The concept of structural levels of organization

(Structural relationships organized in a hierarchical way from the simplest to the most complex)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of system

(An organized set of elements related by nature, structure, purpose, etc.)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of body organ

(Anatomical unit of the body, with characteristic shape and position, formed by the association of two or more tissues that converge to carry out a functional activity)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of the body apparatus

(The set of organs that contribute to a certain function in the organism)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of the body system

(Structural and functional unit of the human body consisting of an apparatus of the organism and the components of other apparatus that are functionally related to it)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

D- ORGAN HISTOFUNCTIONAL ORGANIZATION CONCEPTS

The concept of parenchyma

(Specific tissue of an organ)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of stroma

(Supporting tissue of an organ)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

E- HISTOGENESIS AND DEVELOPMENT CONCEPTS

The concept of histogenetic origin of tissues

(Tissues originate from the progressive differentiation of the three layers of blastoderm in the embryo)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The ontogenetic concept of microscopic structures

(Evolution of the microscopic structure from the fertilized egg to its adult form)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The phylogenic or phylogenetic concept of microscopic structures

(Evolution of microscopic structure in the course of the evolution of species)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

F- TISSUE FUNCTIONAL STATES CONCEPTS

The concept of the euplastic state in microscopic structures

(Orthotypic state or state of health and its variations)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of the proplastic state in microscopic structures

(State of increased general activity: phenomena of renewal, regeneration and repair aimed at recovery of the healthy status)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of the retroplastic state in microscopic structures

(State of decreased general activity: degeneration and ageing phenomena leading to loss of the healthy status)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of the injury state in microscopic structures

(State of alteration of microscopic structures related to loss of the healthy status)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

G- TISSUE ENGINEERING CONCEPTS

The concept of native tissue

(Tissue existing in the human organism)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of artificial tissue

(Tissue engineered for therapeutic application)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of cell, tissue and organ culture

(Laboratory culture of cells, tissue slices or organs for cytological and histofunctional studies or for the generation of artificial tissues)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

H- MICROSCOPIC MAGNIFICATION CONCEPTS

The concept of magnification in magnifying instruments

(Magnifying power of a lens or other optical instrument, expressing the number of times the optical system makes an object appear closer or larger)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of resolving power and limit of resolution in different magnifying instruments

(The resolving power is the ability of any optical system to perceive detail)

(The limit of resolution is the smallest distance that must exist between two points before they can be perceived as separate entities)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of microscopic units of measurement

(System of measurements used for microscopic quantities)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

I- MICROSCOPIC EXAMINATION ANALYSIS CONCEPTS

The concept of histological technique

(Set of steps carried out in the laboratory in order to maintain and make dead tissue visible with magnifying instruments)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of spatial vision in microscopic images

(Ability to imagine and situate microscopic images in two-dimensional or three-dimensional space)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of equivalent image

(Histological image that always reproduces the structure that exists in nature)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of artefact

(Histological image that does not reproduce the structure existing in nature due to the effect of processing: artefacts due to fixation, staining, etc.)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of dynamic vision in microscopic imaging

(The histological image is the portrait of a set of biological processes whose characteristics can be identified by different histological methods: histochemical, immunohistochemical, autoradiographic, etc.).

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

J- HISTOLOGICAL INFORMATION ARISING FROM TWO-DIMENSIONAL OBSERVATION CONCEPTS

The concept of section orientation in relation to microscopic structures

(Ability to relate microscopic structure to the direction of sectioning: transverse, oblique, or longitudinal)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement

The concept of topographic localization of microscopic structures

(Set of terms that identify the location of a given microscopic structure: apical, basal, proximal, distal, etc.)

Total	1	2	3	4	5	Total
disagreement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agreement