BioAtlas

# BIOATLAS - USER MANUAL


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# 1. INTRODUCTION

BioAtlas is a platform for anatomical teaching and study, where students can interact with the human body in a virtual environment through the modules available in: Topographic Anatomy, Systemic Anatomy, Complete Anatomy, Physiology, Embryology, Cytology, Membrane Transport and Histology.

A solution that adapts to various technological tools on the market that allows us to navigate through 3D Interactive Digital Content using any web browser or Android or iOS Mobile App.

## 1.1 Description

The Virtual Cadaver module facilitates clinical training with high quality standards and ensures that teaching is always achieved, not to mention the great interactivity of the user with a platform full of 2D and 3D animation. The integration with real cases provides greater richness in Clinical training and knowledge. The details and possibilities to visualize the structures and rich contents generate more interest and attention, leading the student to more effective educational results. Thousands of structures are meticulously segmented to provide the most accurate real 3D anatomy in any module view.

## 1.2 Indications for use

The BioAtlas platform is recommended for studies in micro and macro anatomy, being indicated for various sectors such as: Undergraduate Health, Technical Courses, High School, Hospitals, Pharmacies and Publishers. In addition, the platform is indicated for visualization of anatomical structures and physiological interaction with animations and explanatory content for health students in general.

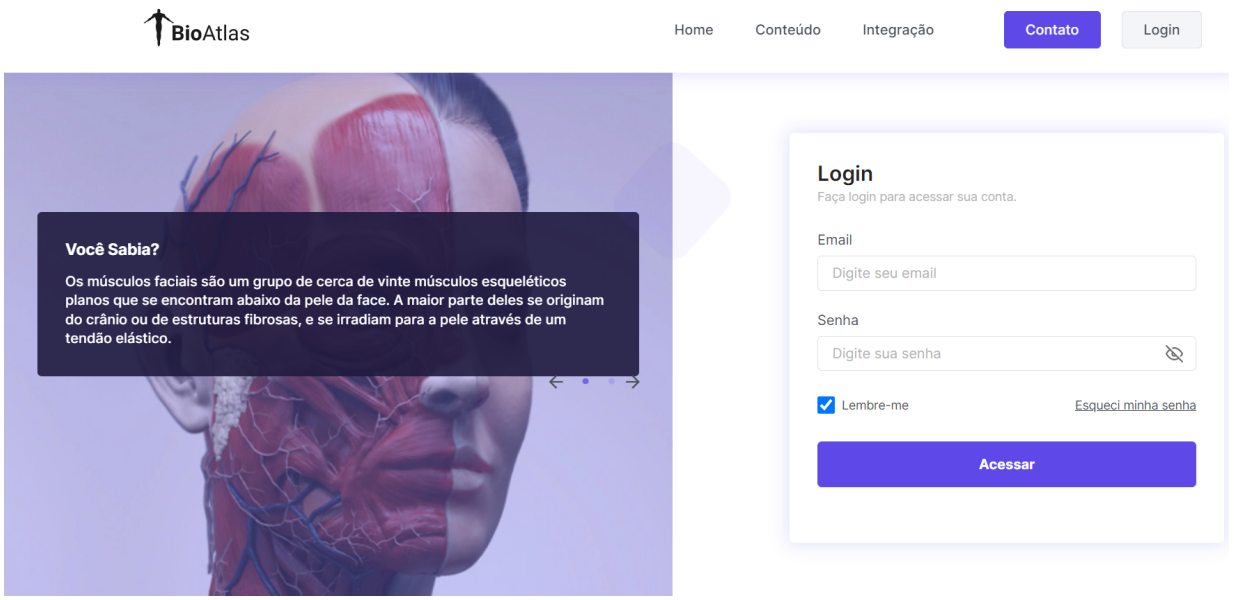
## 2. PLATFORM

The platform can be accessed by any web browser without the need for plug-ins and does not require installation on the Desktop, available via mobile application on Android or IOS operating systems, with the freedom of use and access anywhere just by using the internet.

### 2.1 ACCESS

This platform does not require installation on your computer, so it can be accessed through any web browser by Link (https://bioatlas.medicalharbour.com/), Android or IOS application through their respective stores for download, with internet assistance.

### 2.2 LOGIN

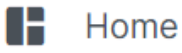



The login page is redirected so that the user can properly enter his email and password to enter into the platform. Information previously provided by the

support team where the user can change password after the first access by clicking on the *"forgot password"* button.

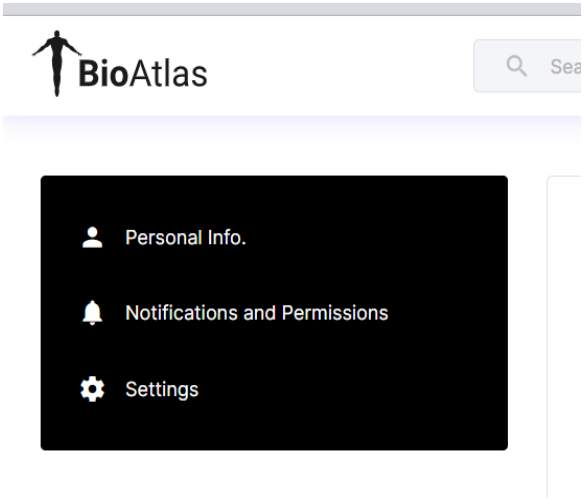
### 2.3 PROFILE

When accessing the platform, in the upper right corner of your screen there will be a circular icon  (**avatar**) . After selecting it, it expands and shows us options such as: **Home, Profile, Help and Exit.**




The Home button returns you to the BioAtlas home screen.


By selecting the **Profile area**, the user will be directed to a tab with configuration options, mentioned in the image below:

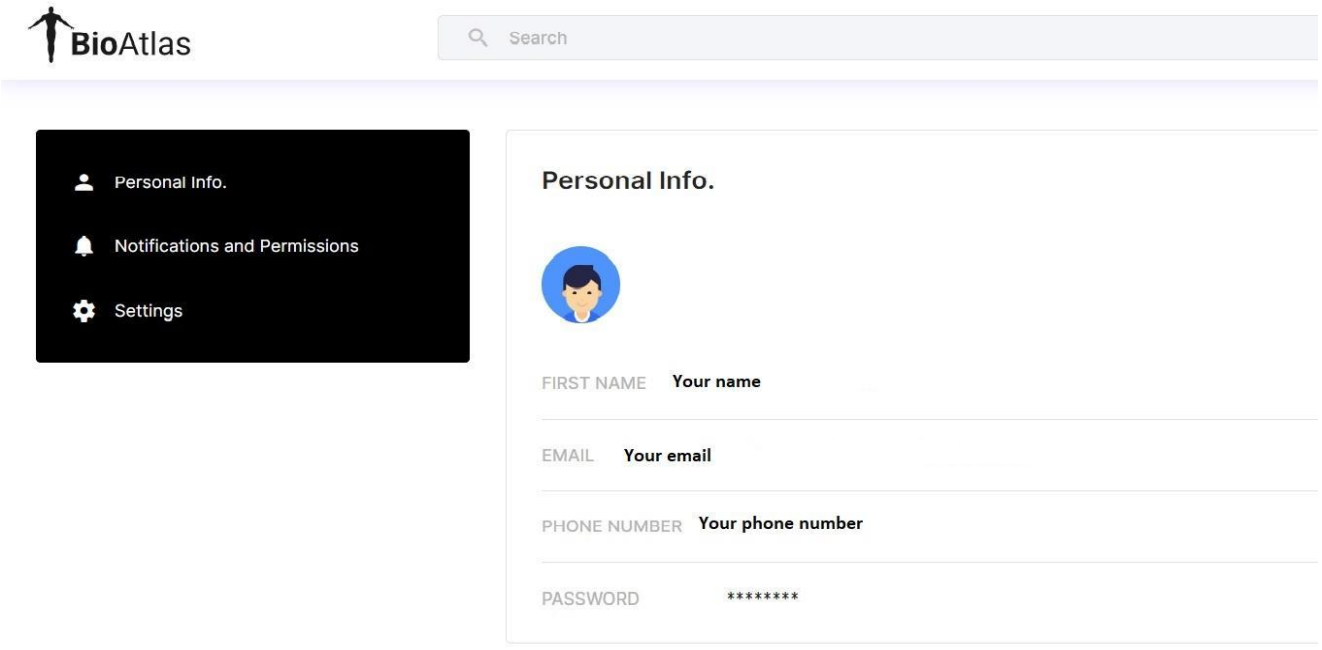


Ajuda This option directs the user to the customer support site (https://medicalharbour.zendesk.com/hc/pt-br), where the student opens a help request to our support team.

Sair The Logout button will disconnect the user from BioAtlas, returning the user to the Login area.

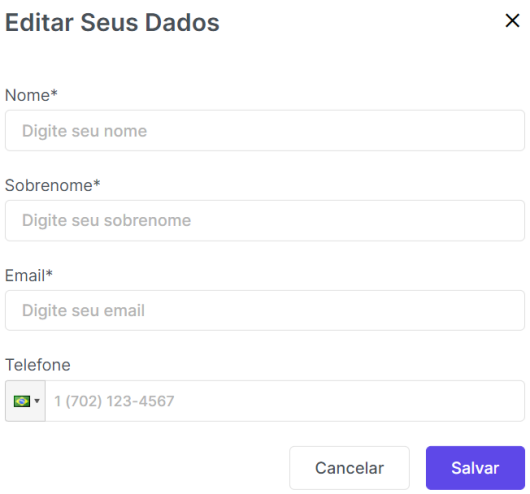
### 2.3.2 Data Modification

**Personal Data:**



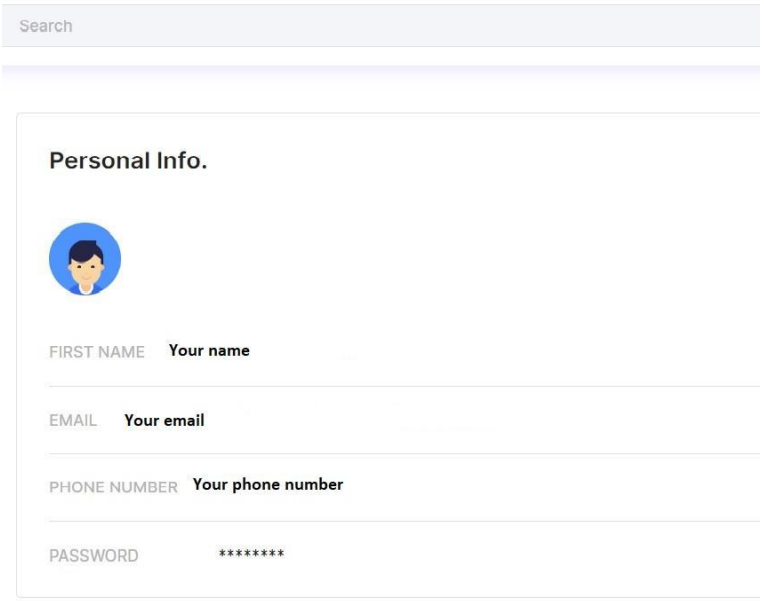
In personal data you will have access to your BioAtlas profile data, for example: **Name, E-mail, Phone and password**. In this area you can change the profile data according to the button in the image above in the upper right corner (**change data**) and in the lower right corner you can change the password in the button (**edit**).

The button will open a data editing menu as below:

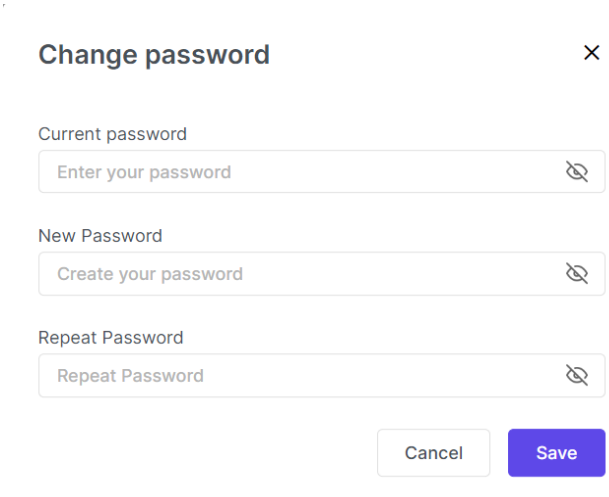



After changing the desired data it is necessary to click save, to confirm the changes.

### 2.3.2 Password change:

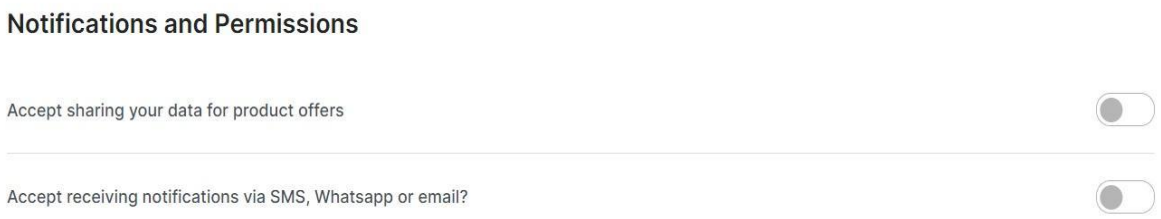



In the personal data area a password edit button is presented, as shown in the image above, after selecting the option a pop-up is presented with an option to change your password.



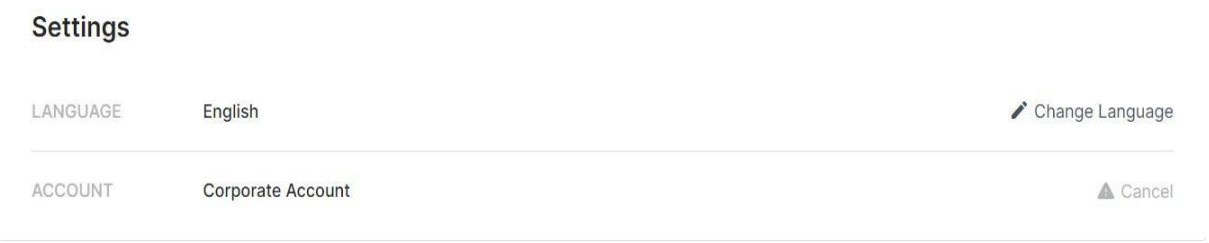
To change the password to access the platform, you must enter the current password and enter a new password by repeating it in the corresponding fields below, as above, and confirming the selection on the (**save**) button.

### 2.3.3 Notifications and Permissions:




By selecting this option you can enable and disable data sharing for product offers or receiving notifications via SMS, whatsapp or email.

### 2.3.4 Settings:




In the settings area we have the option to change the language and account information.

### 2.3.5 Languages

Located in the settings area on the profile page you can change the language of the platform.


The BioAtlas is available in three languages: Portuguese, English and Spanish. To change it, simply select the desired language and click the save button.

**Portuguese** SBA International Terminology: Brazilian Society of Anatomy

**Spanish** TAP - Pan American Anatomical Terminology

**English** International Anatomical Terminology of FIPAT: The Federative International Programme for Anatomical Terminology

## 3. HOME SCREEN


At the home of BioAtlas the user will have access to all the content provided by the platform through *"cards"* - which are illustrative figures that facilitate the identification of the modules, duly named intuitively giving you a preview of the content that can be accessed next. The cards are distributed in Topographic Anatomy, Systemic Anatomy, Complete Anatomy, Physiology, Embryology, Cytology, Membrane Transport and Histology.

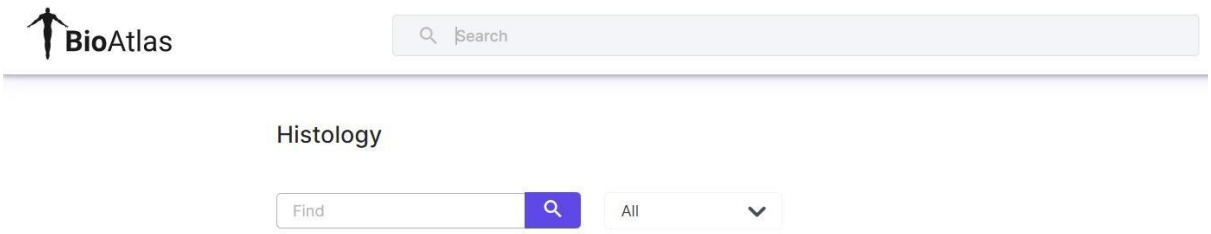
Also on *the cards*, the user can get a brief description of the topic in question by clicking on the icon in the upper left corner inside *the card*. All cards have their descriptions on the icon .

Also inside *the cards* you will find different icons in the upper right corner (human body - in red, microscope in purple and the specific embryology

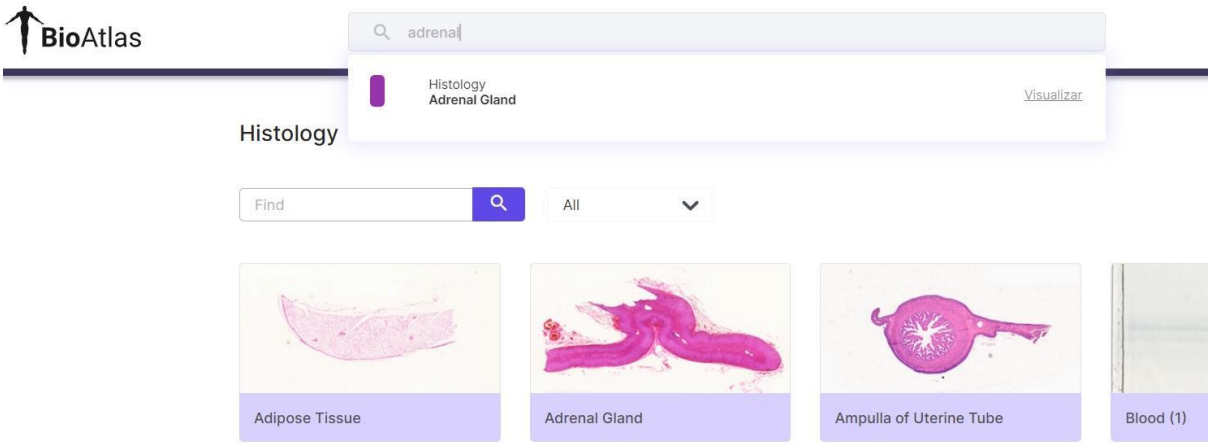
module in green). Each symbol/color represents the specificity of *the card* in question.

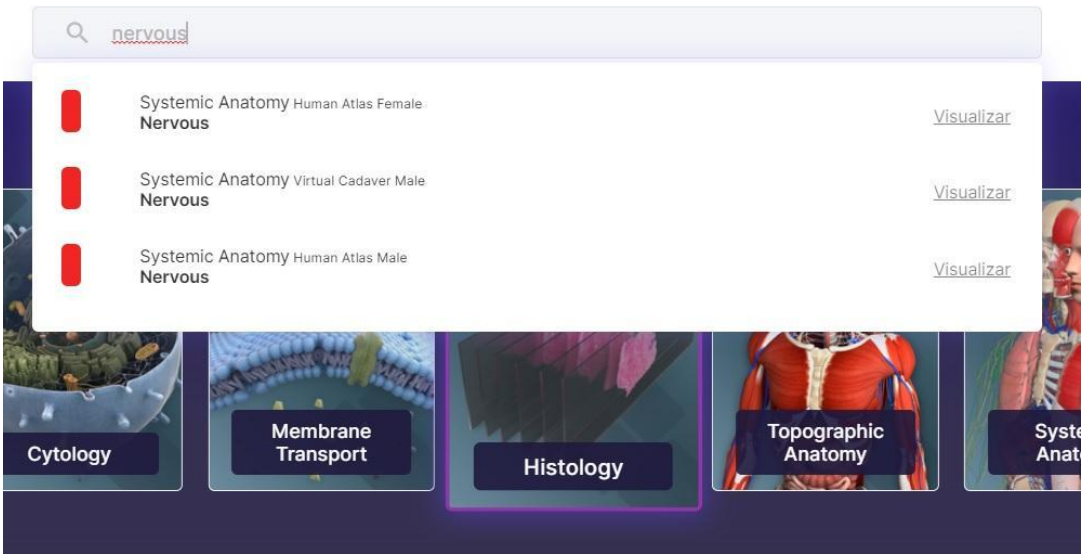

### 3.1 SEARCH MAGNIFIERS

On the main screen of BioAtlas, the user will encounter two different search magnifiers. Both have the functionality of a shortcut, in order for the user to quickly type and search the content you want to view.

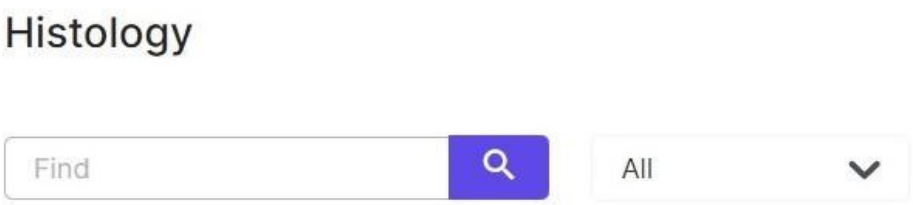


One of them is centralized at the top of the page and has the purpose of searching for anatomical regions and structures and other content contained in our entire BioAtlas system, which is a general search for the entire platform.



The second search magnifying glass will appear when a desired module is selected. There will always be a search magnifying glass inside the modules in order to quickly search for subsequent contents inside the main module the user is exploring. For example: the user selects the Topographical Anatomy module, consequently the content of topographical parts of the Human Atlas is opened and by typing in the magnifying glass field, the desired region of the human body will be quickly located. In this case, they would be in the topographical anatomy: abdomen, head and neck, back, right lower limb, left lower limb, right upper limb, left upper limb, pelvis and thorax.



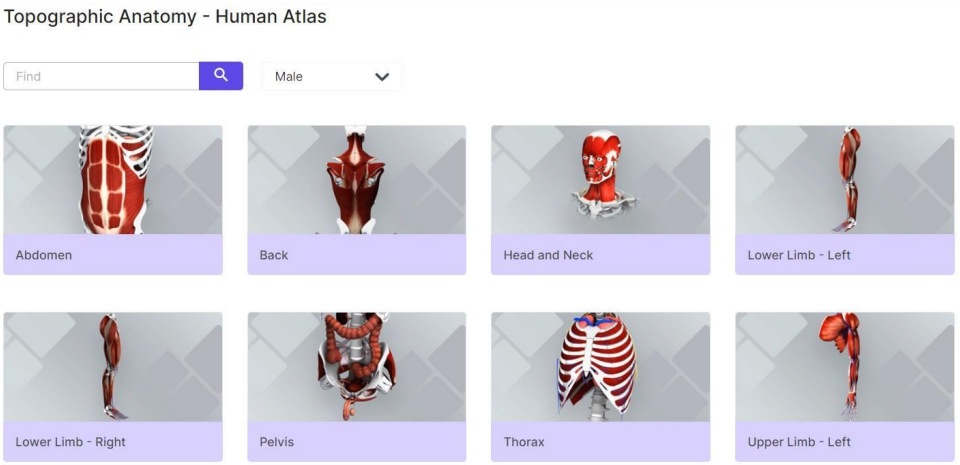

## 4. SPECIFICATION OF THE MODULES

### 4.1 Topographic Anatomy

**This module presents the anatomical regions divided into 9 parts, which are:** abdomen, head and neck, back, right lower limb, left lower limb, right upper limb, left lower limb, pelvis, and thorax.

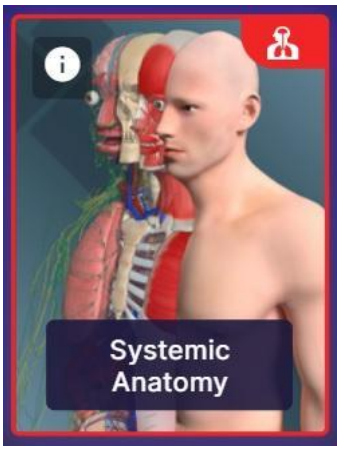
BioAtlas


When passing the mouse over the options, all figures present the icon in the lower corner, which, when clicked, opens the description of the selected window and in the upper right corner with the mouse it has the option to open the link in a new tab without closing the main one. Entering, inside the selected card, in the upper left corner by clicking on the icon with 3 dots (menu), it expands and displays the names of the tools in full or, if you pass the mouse, it displays only the name of the tools.




## 4.2 Systemic Anatomy

This combo consists of the Topographical Anatomy, Systemic Anatomy, Complete Anatomy, and Physiology modules. The contents of the Systemic Anatomy and Complete Anatomy modules were categorized into Human Atlas and Virtual Cadaver. In the Topographic Anatomy module the contents were categorized only into Human Atlas.



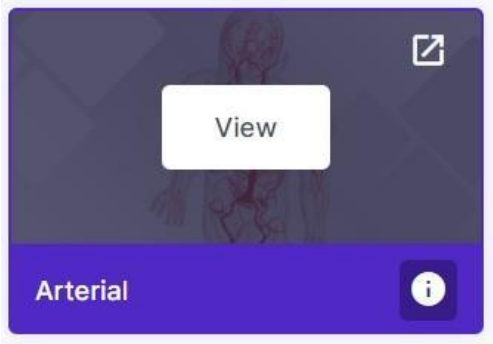
**Human Atlas**


The Human Atlas features a 3D male and female model with about 2400 objects from all anatomical systems of the human body labeled and with an advanced organization system. The atlas, which was developed with the highest quality textures, guarantees an impressive set of data that can be used as a reference during a case discussion, surgical plan, or anatomy lesson. This category of content is separated into Male and Female models and organized according to Systemic, Topographical and Complete Anatomy:

Male and Female Tegumentary system Muscular system Skeletal system Joint system Nervous system Lymphatic system Digestive system Respiratory system Arterial system Venous system Endocrine system Urogenital system


we can change to Male or Female human atlas

By placing the cursor above the arterial system we can perform three actions, one is to view the system completely, two we can open the link in new tab and three we can view and read the description of the system where we will find all the information.




**Virtual Corpse**


This content category presents a 3D model with 261 objects of a Virtual Corpse developed with about 1800 real images of the human body (Visible Human project). These images were segmented into objects and tissues, reconstructed volumetrically and worked on to maintain the most faithful proportions and textures of a human corpse. This content category presents a

3D model of the human male body organized according to Systemic and Complete Anatomy. For each anatomical object you can see its name in Portuguese, English and Spanish according to the International Anatomical Terminologies. In addition, supporting descriptive texts are available in the three languages for all anatomical systems.

Male: Male Human body with more than 250 objects, Tegumentary system, Muscular system, Skeletal system, Articular system, Lymphatic system, Digestive system, Respiratory system, Circulatory system, Urogenital system.

### 4.3 Cytology

By selecting the module, in the upper left corner there will be an icon, hovering the mouse over the description and clicking it opens showing the information.

Cytology, also known as Cell Biology, is the science that studies cells and their organelles, as well as their functions and importance in the constitution of living things and covering their internal structures.

**The module consists of 3 parts:**

Hovering the mouse over the options, all figures display  . In the lower corner that when clicked opens the description of the selected window and in the upper right corner with the mouse you have the option to open the link in a new tab without closing the main one.

### 4.4 Histology

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Selecting the module, in the upper left corner there will be an icon  , hovering the mouse over the description and clicking it opens showing the information.

Histology is the science that studies the formation and composition of biological cells, organs, and tissues, and investigates their individual functions and how they are related to the proper functioning of the organism. This module allows the user to view images of 102 human tissue slides scanned in high resolution. In addition, this content is categorized into Tissues (17 slides), Systems (82 slides), and Sensory Organs (3 slides).

The Tissues and Systems module is divided into:

**Tissues**

Epithelial

Connective

**Systems**

Circulatory, Articular, Digestive, Endocrine, Tegumentary, Lymphatic, Muscular, Nervous, Respiratory, Urogenital, and Skeletal systems. Also, each slide was described according to the type of tissue (human), staining (hematoxylin-eosin, giemsa, silver, Wright's stain, and hematoxylin only), and type of section (smear, longitudinal only, transverse only, transversal and longitudinal and sagittal).

Hovering the mouse over the options, all the pictures show  . In the lower corner that when clicked opens the description of the selected window and in the upper right corner with the mouse you have the option to open the link in a new tab without closing the main one.

### 4.5 Membrane Transport


When you select the Membrane Transport module, the contents of this module will expand at the bottom of the screen. These are: Primary Active Transport - Sodium and Potassium Pump, Secondary Active Transport - Contratransport,

Secondary Active Transport - Cotransport, Passive Transport - Facilitated Diffusion, Passive Transport - Simple Diffusion.

### 4.6 Physiology


When selecting the Physiology module, the user will encounter the contents of: Lung Alveoli, Cardiac Cycle of the Human Heart, Muscle Fiber Contraction, Action Potential Generation and Conduction, Synaptic Transmission, and Lung Ventilation.

All content in the physiology module has motion animation for a reality.

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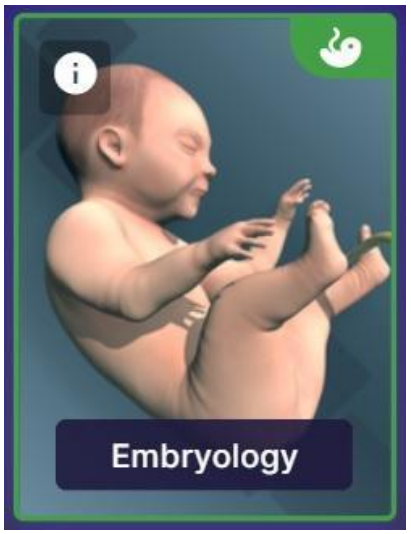
## 4.7 Complete Anatomy


This module includes anatomical models representing the male and female body, as well as the virtual male cadaver.

Human Anatomy is the science that studies the morphology and organization of the human body, through observation and analysis of the constituent macroscopic structures. This analysis is correlated to the functioning of the various parts and the mechanisms of formation and response to environmental, genetic, and temporal factors. It can be categorized, from the separation of the parts, into Organ Systems and Anatomical Regions.

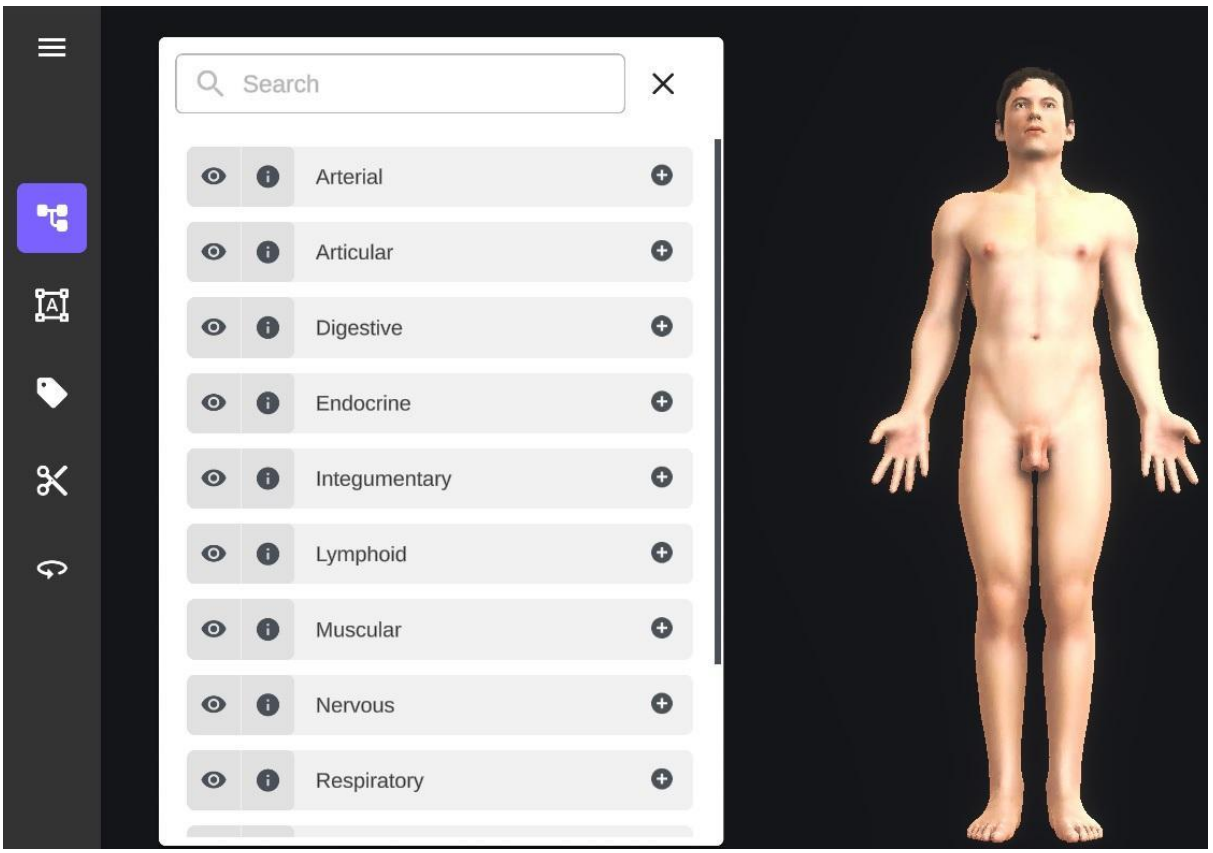
## 5.8 Embryology




The Embryology module allows the user to visualize and interact with 2 3D animated contents with 11 objects and nomenclatures in Portuguese, English, and Spanish.

Fetal Period of Development containing 4 scenes from the 9th week until birth, corresponding to the last 7 months of gestation. In addition, in order to facilitate learning and study, this module has descriptive support texts in the three languages for each scene of the contents.

## 6. TOOLS

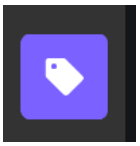



**On the left side of the screen you can see the following tools:** *structure tree, text box, label, cut, and automatic rotation, which we will see next.*

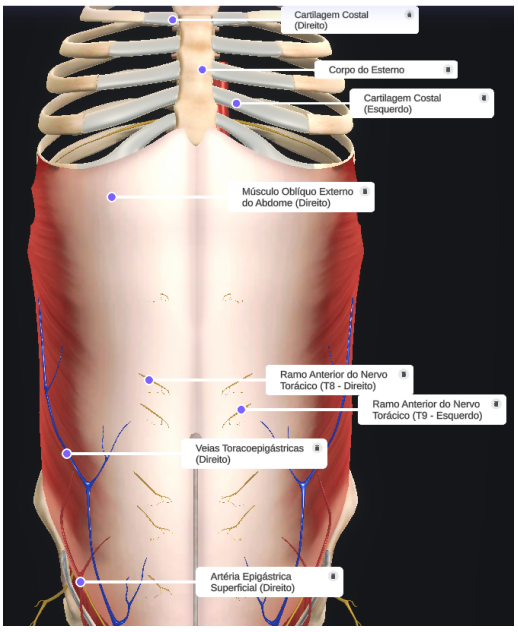
**Structure Tree:** clicking with the mouse opens a search tab, showing suggestions for the selected member. With the tab still open it shows a suggestions column: the icon (i) that when clicked shows the

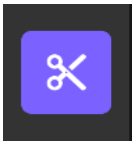
description, an eye to isolate the selected structure and on the right side of the line there is a + sign that when clicked opens a range of suggestions of the selected structure and the scrolling in the corner of the tab to help in the search.

**Text box:** When the mouse is clicked, this box will open in the plan you can make annotations. But when you close the program this annotation will not be saved, they are temporary annotations.



**Label:** When you click on the structure it labels the selected structure member.





**Crop:** Clicking on the upper right opens a scale with the cropping options: x-sagittal, y-axial, z-coronal.

**Rotate:** Clicking opens an icon with the suggestion: pause, restart and speed. The member is rotated in the plane.

**In the upper right corner you have the option:** Reset by clicking back to original position

**Focus:** By selecting the area of interest in the structure, the purpose of the tool is to center the image giving a more objective view.

**Select multiple:** This option allows us to select more than one member structure by clicking with the mouse.

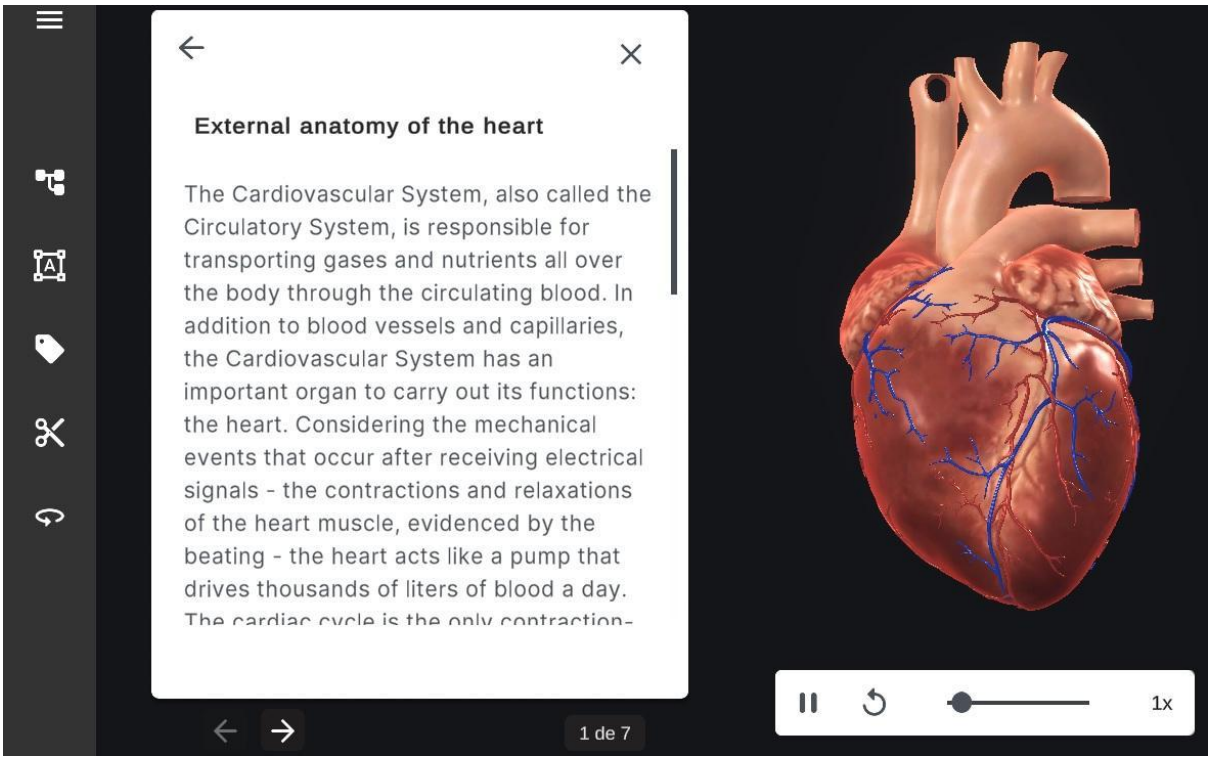
**Hide:** Selecting the member structure with this function makes it "invisible" without showing up in the member.

**Isolate:** Selecting a structure makes it alone in the workspace plan and the other structures "disappear", being able to return by clicking on redefine.

**Refocus:** Bottom right side shows refocus, clicking returns it to the initial position of the module opening, i.e., the structure returns to the initial position.

**Enlarge:** The image gets wider, that is, bigger (zoom).
**Decrease:** Reduces the image, i.e. makes it smaller.

**Anatomical description of body parts.**



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The Cards bring information about the contents related between regions and systems highlighting the anatomical study guidelines. The Physiology module has a phasing that changes the animation and consequently the content, explaining what happened in the organ for understanding and interpretation of the study.

***Note:** Only the Physiology module presents phasing with images of interactive animations.*

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## References

ALBERTS, B. et al. Biologia Molecular da Célula. 6th Edition. Porto Alegre. Artmed, 2017. ALBERTS, B. et al. Essential Cell Biology. 4th edition. 2014. BARBOSA, H. S.; CÔRTE-REAL, S. Biologia celular e a ultraobjeto. Conceitos e Métodos para Formação de Profissionais em Laboratório de Saúde. Rio de Janeiro. FIOCRUZ, 2010. 23 - 42. CLEMENTE, C. D. Anatomy: A Regional Atlas of the Human Body. 6th Edition. 2011. DANGELO, J. G; FATTINI, C. A. Anatomia Humana Sistêmica e Segmentar, 3rd edition. 2007. FCAT Anatomical Terminology, 1st ed. FCAT (Federative Committee of Anatomical Terminology) and SBA (Brazilian Anatomy Society). 2001. FCAT Anatomical Terminology, 1st ed. FCAT (Federative Committee of Anatomical Terminology) and SAE (Sociedad Anatómica Española). 2001. Available In: http://www.anato.cl/cccccAV1/TERMINOLOGIA_ANATOMICA_INTERNACIONAL.pdf FIPAT. Anatomical Terminology, 2nd ed. FIPAT (Federative International Program for Anatomical Terminology). 2019. Available In: https://fipat.library.dal.ca/TA2/ GUERRA, R. A. T. et al. Caderno Virtual do Curso de Ciências Biológicas da Universidade Federal da Paraíba (UFPB): Biologia e Fisiologia Celular. João Pessoa. Ed. Universitária, 2011. Disponível em Último acesso em 09 de fevereiro de 2021. JIMENEZ, L. F.; MERCHANT, H. Biología Celular y Molecular. México. Pearson Educación, 2003. KOEPPEN, B. M; STANTON, B. A. Berne & Levy Fisiologia, 6th edition. 2008. MARTINI, F. H.; TIMMONS, M. J.; TILLITSCH, R. B. Human Anatomy. 7th edition. 2011. NETTER. Atlas of Human Anatomy, 7th edition. 2019. SCHUENKE, M; SCHULTE, M. D; SCHUMACHER, U. THIEME Atlas of Anatomy: Head and Neuroanatomy. 2010. SOBOTTA. Atlas of Anatomy -

General Anatomy and Musculoskeletal System, 16th mode. 2017. SOBOTTA. Atlas of Anatomy - Head, Neck and Neuroanatomy, 16th edition. 2017. SOBOTTA. Atlas of Anatomy - Internal Organs, 16th edition. 2017