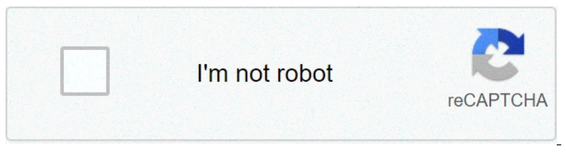

Continue

How to calculate the magnification of a cell

How to find the magnification of a cell. How to calculate the magnification of a sperm cell. How do you calculate the magnification of a cell.

SEÇÃO 2: Molecular composition of cells The practical techniques of life sciences are an important part of Life Science's evaluation program. This section addresses some of these important skills. Students are introduced to several microscopes and this allows design skills, labeling and annotation of diagrams and micrographs, using microscopes, as well as calculating the skills enhancement . (This will be covered later in this chapter). The cells are the structural and functional units and the basic function of all living organisms. The cells are composed of the compounds that you learned in the previous chapter: carbohydrates, fats, proteins, nucleic acids and water. The word 'CÃ © Lula' was first used by the scientist of the century XVII Robert Hooke to describe the small pores in a cork that he observed under a microscopio. Cathles are very small structures. The human body is composed of \ (\ text {10} {\ text {13} \) Cryles. Each of them is too small to see with the human eye and is through the development of microscopic techniques that we have been more capable of visualizing and understanding them. Early attempts to expand images of objects through glass lens grinding have just caused the earlier microscopio. In 1600, Anton Van Leeuwenhoek, a Dutch microbiologist used a simple microscopic with only one lens to observe the blood cells. He was the first scientist to describe cells and bacteria through the observation under microscopio. By combining two or more lenses, the magnification of the microscopes was improved, allowing scientists to view smaller structures. The dissection microscope is a microscopio used to view images in three dimensions in low resolution. ‰ ‰ ‰ ‰ ‰ ‰ ‰ for low level of live tissue. The development of light microscope (Figure 2.5) that uses visible light to enlarge the allowed images for an overlapping of objects of objects through which scientists were able to see individual cells and internal structures of cells, such as cell wall, membrane, mitocyndrias and chloroplasts. . However, although the mild microscope has allowed 1000x expansion in order to see further structures, such as the internal structure of the organelles, microscopes of higher resolution of resolution (with increase of up to 10 000x). With the development of electronic microscopes, the microscopic detail of organella, such as mitociandrias and chloroplasts, have become more convenient to observe. The electronic transmission microscopio (has) was developed first, followed by the electronic scanning microscopio (without). It is used to see extremely thin sections of material. Elés de Trons pass through the material and are focused on electromagnetic lenses. No without the elés are sautéed from the surface of the material and thus produce a detailed image of the external surface of the material. They produce a 3D image catching elés secondary tronses from the surface with a collector of ElÁ © trons. The image is then amplified and displayed on a screen. Examples of each of the image types produced by these microscopes are given in the figures Figure 2.1 for Figure 2.3. The sections for have to be so thin that need to be prepared using a special equipment called ultramicrotome. The world through a microscope without: a natural community of bacteria growing in a single sand gran. Without: These powder grains show the depth of field characteristic of micrographs without. It has: image of chloroplast, showing Thylakoid discs inside a eukaryotic CÃ ©. Electronic transmission microscopes can expand an image of 50 million times. Figure 2.4: Electronic microscopio of transmission in use. The most commonly used apparatus in laboratory microscopy exercises is a simple microscope of light. Table 2.1 shows a diagram annotated from a microscopio of with a description of the function of each part. The main parts are described in the following table and the function of each part is explained. Figure 2.5: Mild microscopePart Microscoptered lens / ocular containing two or more lenses. - These lenses are kept in the right distance of work. - The eye / ocular eye helps bring the object in focus. Revolution of the Nose Revolving Piece Revolving Nose Piece holds the goals in place so they can turn and can be easily altered. Objectivethe goal extends objects. Usually there are three objectives present: 4x 10x extension 40x enlarging thick adjustment The coarse adjustment screw is used for the initial focus of the object. When moving the stage up and down, bringing the closest or further object from the objective lens.Fine bolt adjustment The thin adjustment screw is used for the final and clear focus of the object.Frame - a rugged structure for stability . - The picture is supported by a U-shaped Panry that leads to the base of the microscopio. Light Source / Mirror - Provides a light source so that the object can be viewed.Idragm and condenser diaphragm and condenser control the amount of light that passes through the slide.stage- The microscopio slide is placed here. - The stage contains a clip or clips to prevent the slide moves. There is a hole in the stage that allows light. Table 2.1: The parts of a microscope. The nose and ocular and rotating goals are maintained above the stage by arm. How to use a microscopio correctly when handling or transporting the microscopio, always do it with both hands. Hold the arm with a hand and place the other hand under the base for support. Rotate the tinatory piece so that the smallest power of power is in position. Place the microscope slide on the stage and tighten it with the stage (s) clip (s). Look at the eyepiece and adjust the diaphragm to the largest amount of light. When looking at the slide on the stage on the side, rotate the coarse adjustment screw so that the stage is the closest possible of the objective lens. WARNING: Make sure you do not touch or damage the slide. Slowly, rotate the coarse adjustment screw until the image focuses on focus. Now use the fine-tuning screw to move the stage down until the image is clearly visible. Never move the lens in direction to the slide. You can readjust the light source and the diaphragm for the clearest image. By changing to the next objective lens, use the fine adjustment screw to focus the image. Warning: Never use the thick adjustment screw for the strongest objective lens. Do not touch the glass part of the lenses with your fingers. When finished, move the stage and goal as far from each other as possible and remove the slide. Disconnect the power source and cover the microscope. Take the microscope holding firmly by the "arm" and "base" and walking, it must be close to your chest. Remember that microscopes are expensive scientific equipment and need to be treated carefully to avoid damaging them. The suitable lens paper should be used while cleaning dust or dirt of any lens. Avoid getting moisture in objective lenses. Dust and moisture are the greatest enemies of microscopes. If you are wearing a mirror for lighting, instead of a lamp, it never reflects the direct sunlight, for you can damage your eyes. Differentials between light microscopio and electronic transmission microscopic microscopy microscopyrsource microscopesourceLightBeam of electronresolution (how far two objects should be to be distinguished as separate) under great conditions (clean lenses, of oil), the resolution is \ (\ text {0.2} \) Micrometers or 2,000 of millimeterresolution of an electronic microscopio of transmission is on \ (\ Text {0.05} \) Nanã'meters (\ (\ (\ (\ text})) which is over \ (\ text {0.5} \) millionmeter million. This means that an electronic transmission microscopio has about \ (\ text {10 000 \) times the solving power of a live or dead or dead Luzmaterial instrument. The field contrast microscopes or shiny phase allow observer to observe the cells Species need to be The images of electronic microscopio are produced by passing by a beam of ElÃ © trons through tissues stained with heavy metals. They will examine bacterial microscopic image spores as seen under light microchief. Chlamydomonas Reinhardii, a single green algae of Celled, as seen under the electronic microscopio of transmission. Microscopes extends an image using a lens found in the eye, which also is known as the eye lens. The image is still enlarged by the objective lens. Thus, the expansion of a microscopio is: power of ocular pieces XO power of the example of the lens objective: if the ocular expansion is 5x and the enlargement The objective lens is 10x, the image of the object viewed under the microscope is 50x larger than the object: \ begin {align *} \ text {broadcast} & = \ text {feed }} \ Times \ text {goal potency} \\ & = 5 \ times 10 \\ & = 50 \ times \ text {the original size} \ end {align *} Display field calculation When visualizing an object through a microscopio, the circle diameter through which you see the object is known as the field of vision. As the enlargement increases, the field of the vision decreases. To measure the field of vision, use a microscopic bladder with a small ruler printed on it. For example, the size of the vision field shown below under the low energy magnification is approximately 1 mm. Figure 2.6: Vision field is approximately 1 mm. Once the size of the field of vision is known, we can estimate the size of the objects being seen under the microscopio. In the 10x expansion, the vision field is \ (\ text {1.0} \) mm. If the magnification is increased to 100x, what will the new vision field be? \ (\ text {1.0} \) mm to 10 x magnification \ [\ text {new field of display} = \ frac {\ text}} {\ text {new magnification }}}} {Current display field} \] \ (x \ (x \) mm in 100 x magnification \ begin {align *} \ text {new view field }} & = \ Frac {\ text}} {\ text {new magnification}}}} \ text {current display field}} {10} {10} {100} {100 } \ Text \ text {1.0} \ text {mm} \\ & = \ text {0.1} text {mm} \ end {align *} If the magnification is increased by 10 times, the Display field will decrease 10 times. Thus, it will become 0.1 mm. What this means is that in greater expansion, we are able to see objects of smaller and smaller size within our vision field. That's why in greater magnification, the field of the vision gets smaller. In 500 x extension, the vision field of a microscopio is \ (\ text {0.05}}} mm. What is the vision field in 100x magnification? \ Begin {Align *} x & = \ frac {500} {100} \ Text { 0.05} \ XT {mm} \\ & = \ text {0.25} \ text {mm} \ end {mm} {align *} Calculating the expansion and using bars of scale while drawing cells or cellular structures, Diagrams will usually be much larger than the actual size of the structures you will be drawing. The extension is given by: \ [\ text} = \ frac {\ text {drawing size}} {\ text {actual size}}} \] When a scale bar is supplied with the diagram, The extension is given by: \ [\ Text} = \ text} {Draw size} \ Times \ frac {\ text {dimer given}} {\ text {scale measured length}} \] Calculate the Global magnification of a compound light microscope with a 10 x-due enlargement and a 100x magnification due to objective lens. Using the Formula: \ Begin {Align *} \ Text {General Amplification} e = \ Text {Eye Power} \ Text \ Text {Purpose Potence} \\ & = 10 \ Times 100 \\ & = 1000 \ Text \\ text {the original size} \ final {align *} If the measured length of the enlarged image of the beetle larva shown below was 2 centimeters (20 mm), the ocular magnification of the microscopio is From 5 x you are using an objective lens expansion of 10 x, which is the actual length of the larva in millimeters? Figure 2.7: A beetle larva as seen under a light microscopio. Use the same fan \ Begin {aligning *} \ text {general amplification} & = \ text {ocular feed} \ Text \ text {Power Power} \\ & = 5 \ Times 10 \ text {o {o Size} \ End {Align *} If the image is 50 x larger than the object, which is the size of the object? Calculate this by simple proportion given in the trunk below. \ begin {align *} \ text {size} & = \ frac {\ text {image size}} {\ text {global magnification}} \\ & = \ frac {\ text}} {50} \\ & = \ text {0.4} \ text {mm} \ end {align *} Calculate the real AB length of the image shown in the micrograph given with the scale bar given below. Figure 2.8: Electronic micrograph showing endoplasmic reticulum osper with a scale bar, given to this should be approximately \ (\ text {20} \) \ (\ text {mm} \) Since the measured length of the scale bar is approximately \ (\ text {5} \) \ (\ text {mm} {mm} \), eliminate the length ab: \ begin {align *} \ text {size} & = \ frac { \ text {AB length in diagram}} {\ text {}}}}}}}} {\ Text {MM}} {\ Text} {\ text {5} \ text}} times {\ text {500 nm}} \\ & = \ text {2 000} \ text {nm}} \\ & =} {2} \ text {\ m} \ final { Align *} Activity 3.2: Investigation of CÃ © Lula Size Apprentices to receive photomicrographs to practice this exercise. Activity 3.3: Drawing diagrams of scale apprentices to prepare slides to see under the microscopio. Using the abilities of the previous activity, they should make cell holes. CLASES.