



Dra. Carolina Frandsen P Costa  
contato@clorofreela.com



# Desenhando o invisível



05/06/2024



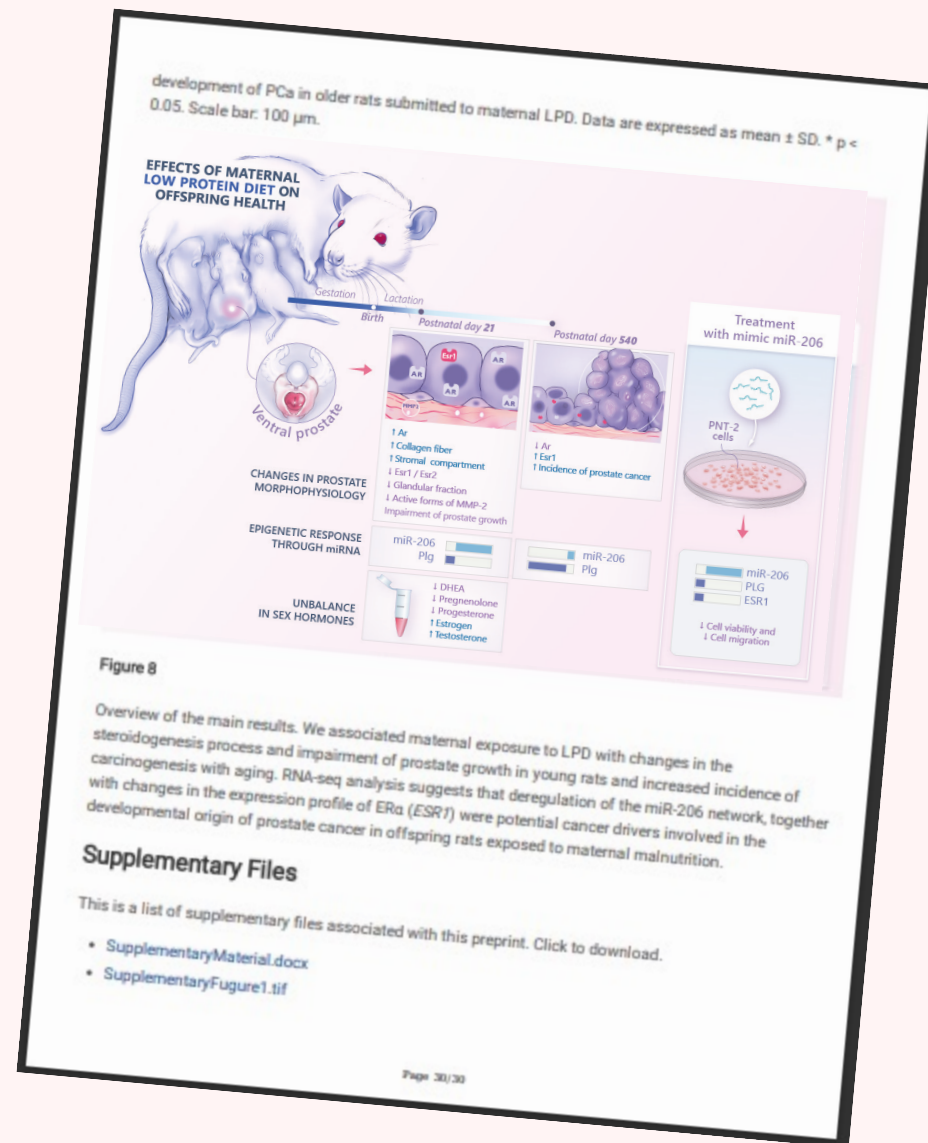


Figure 8

Overview of the main results. We associated maternal exposure to LPD with changes in the steroidogenesis process and impairment of prostate growth in young rats and increased incidence of carcinogenesis with aging. RNA-seq analysis suggests that deregulation of the miR-206 network, together with changes in the expression profile of ER $\alpha$  (*ESR1*) were potential cancer drivers involved in the developmental origin of prostate cancer in offspring rats exposed to maternal malnutrition.

### Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [SupplementaryMaterial.docx](#)
- [SupplementaryFigure1.tif](#)

Page 30/30

In: [Early-life origin of prostate cancer through deregulation of miR-206 networks in maternally malnourished offspring rats – Abstract – Europe PMC](#)



"non-random notes"



cicada

acronyms



"sustainability seminars" and "international research workshop on sustainability indicators and water resources management"



**REDE**  
PATRIMÔNIO  
EM PAUTA

rock painting  
archaeological site

"heritage network on the agenda"

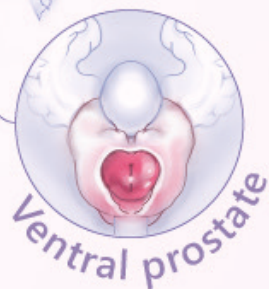
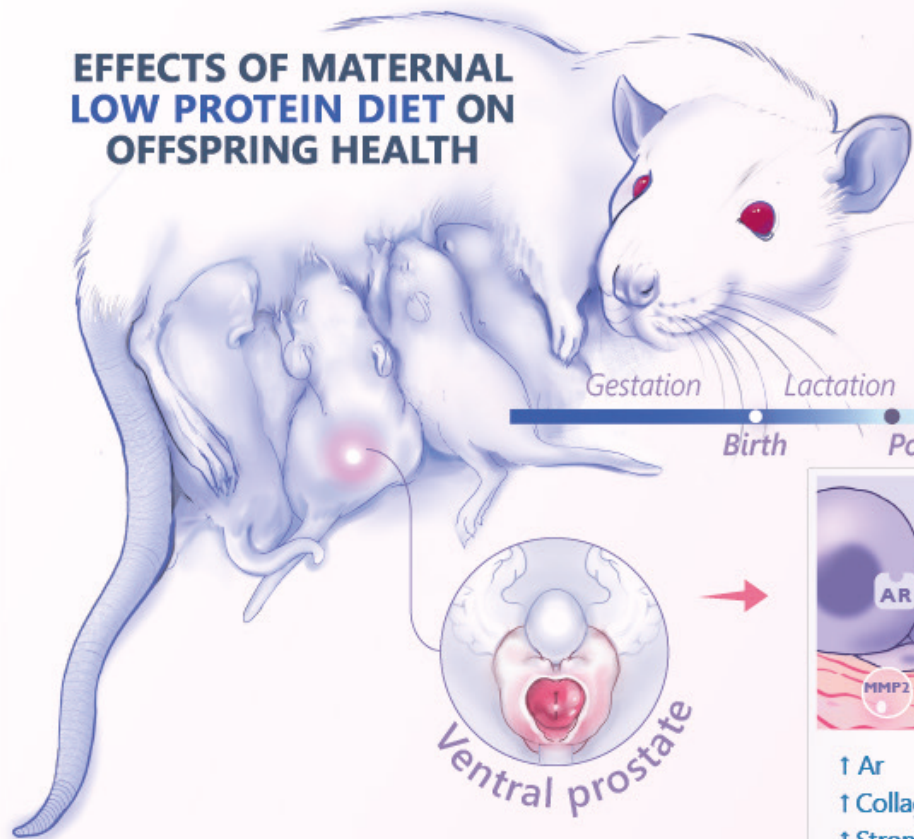


**Blogs**  
**Unicamp**

unicamp = campina's state university



# EFFECTS OF MATERNAL LOW PROTEIN DIET ON OFFSPRING HEALTH

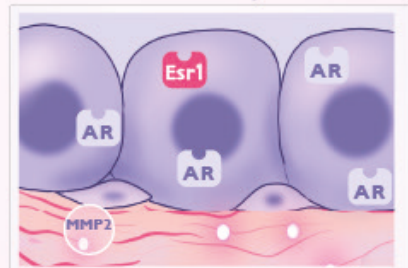


## CHANGES IN PROSTATE MORPHOPHYSIOLOGY

## EPIGENETIC RESPONSE THROUGH miRNA

## UNBALANCE IN SEX HORMONES

Postnatal day 21

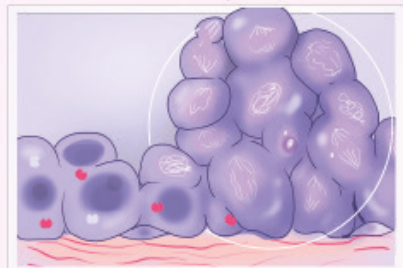


- ↑ Ar
- ↑ Collagen fiber
- ↑ Stromal compartment
- ↓ Esr1 / Esr2
- ↓ Glandular fraction
- ↓ Active forms of MMP-2
- Impairment of prostate growth



- ↓ DHEA
- ↓ Pregnenolone
- ↓ Progesterone
- ↑ Estrogen
- ↑ Testosterone

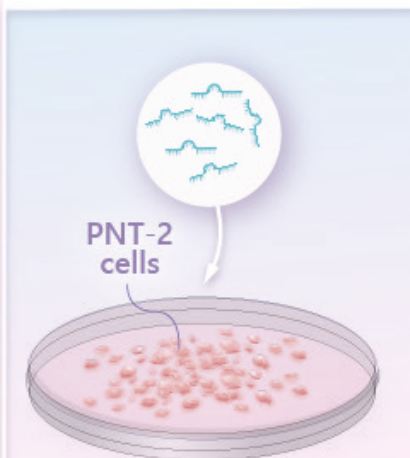
Postnatal day 540



- ↓ Ar
- ↑ Esr1
- ↑ Incidence of prostate cancer



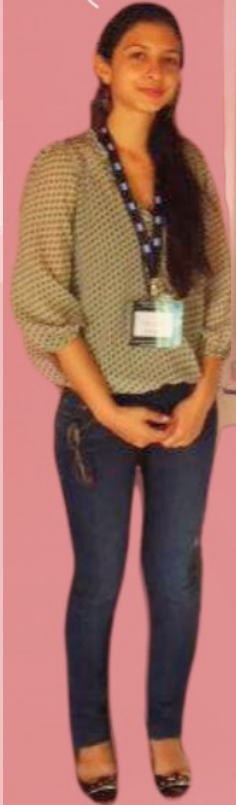
## Treatment with mimic miR-206



- ↓ Cell viability and
- ↓ Cell migration

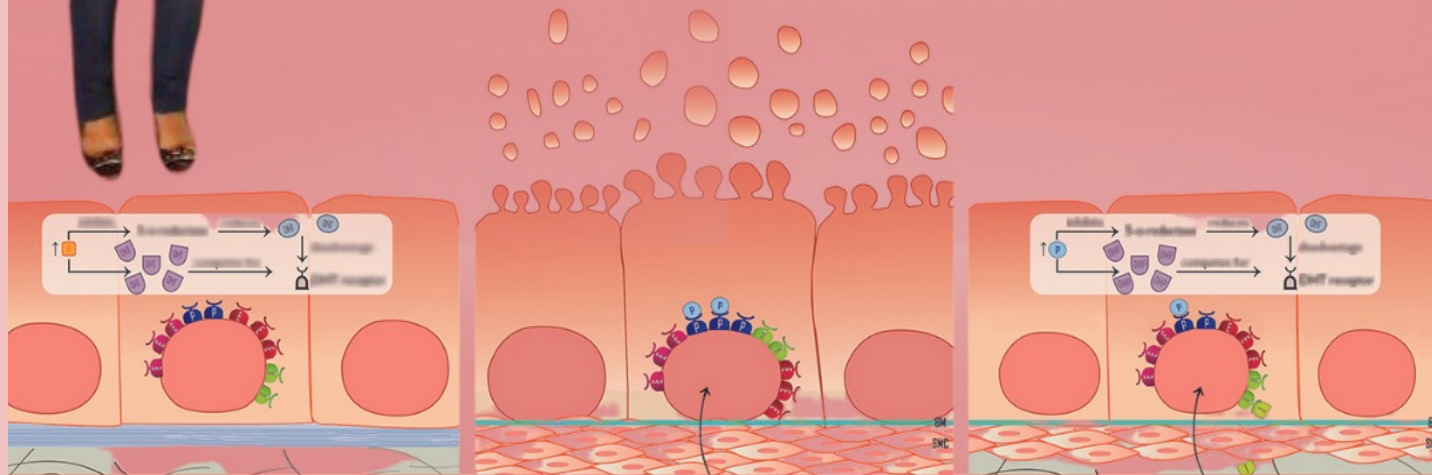


2011\*



COMO FOI MINHA TRAJETÓRIA DE

# CIENTISTA *a* ILUSTRADORA CIENTÍFICA

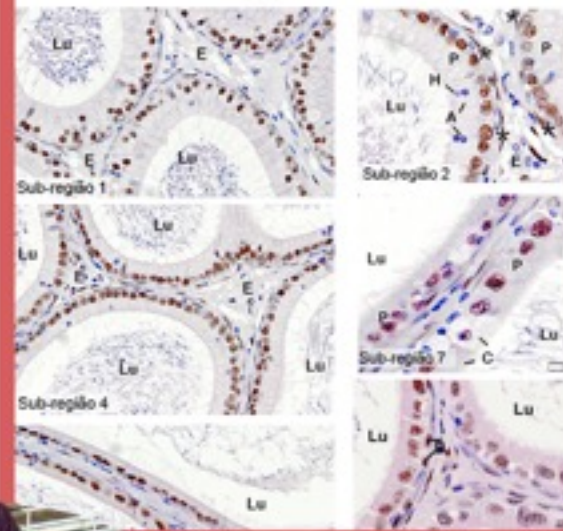






A estética peculiar de álbuns de formatura

### Controle (C)

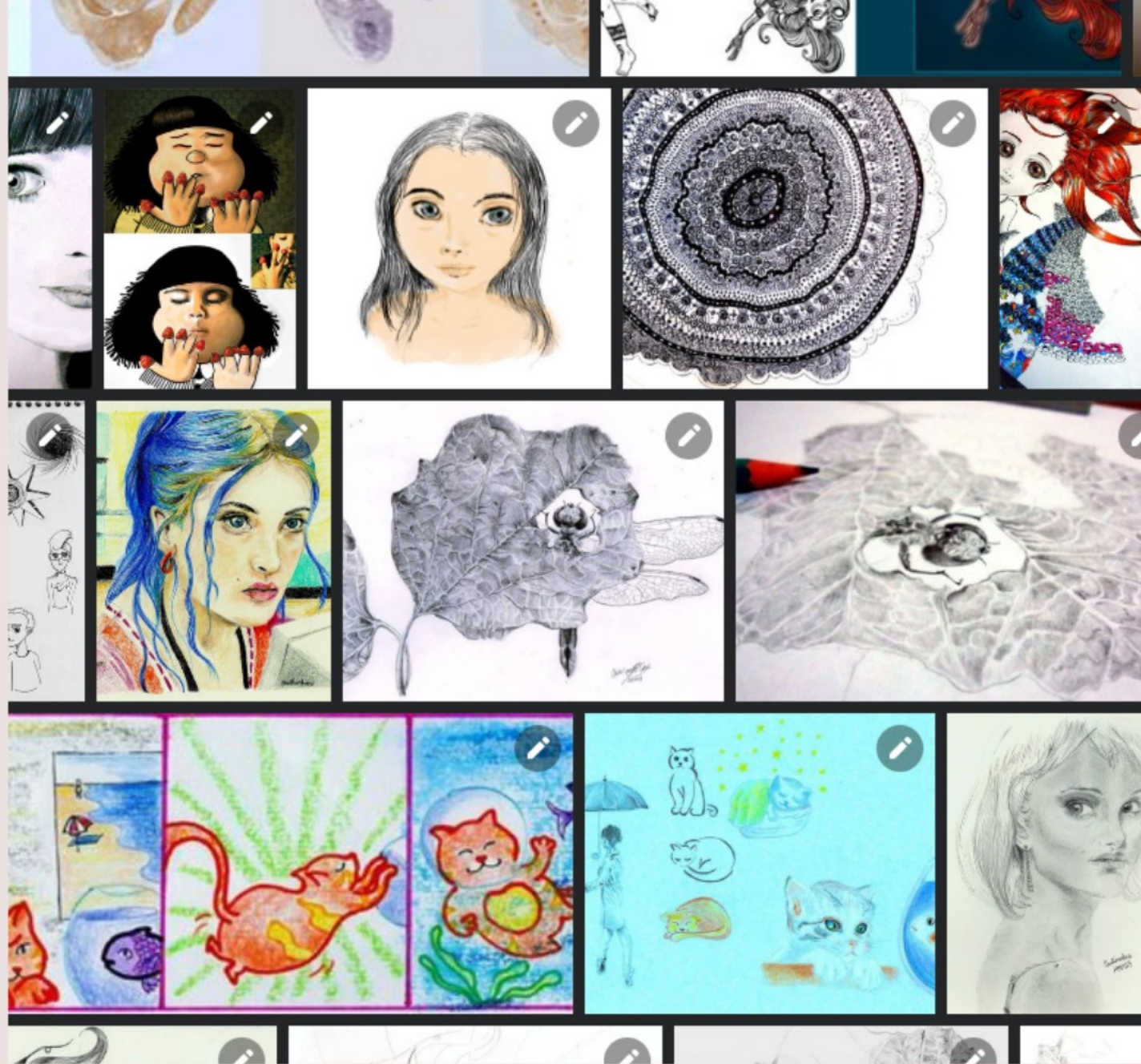


Imunohistoquímica



Cortando órgãos de rato pra dissertação

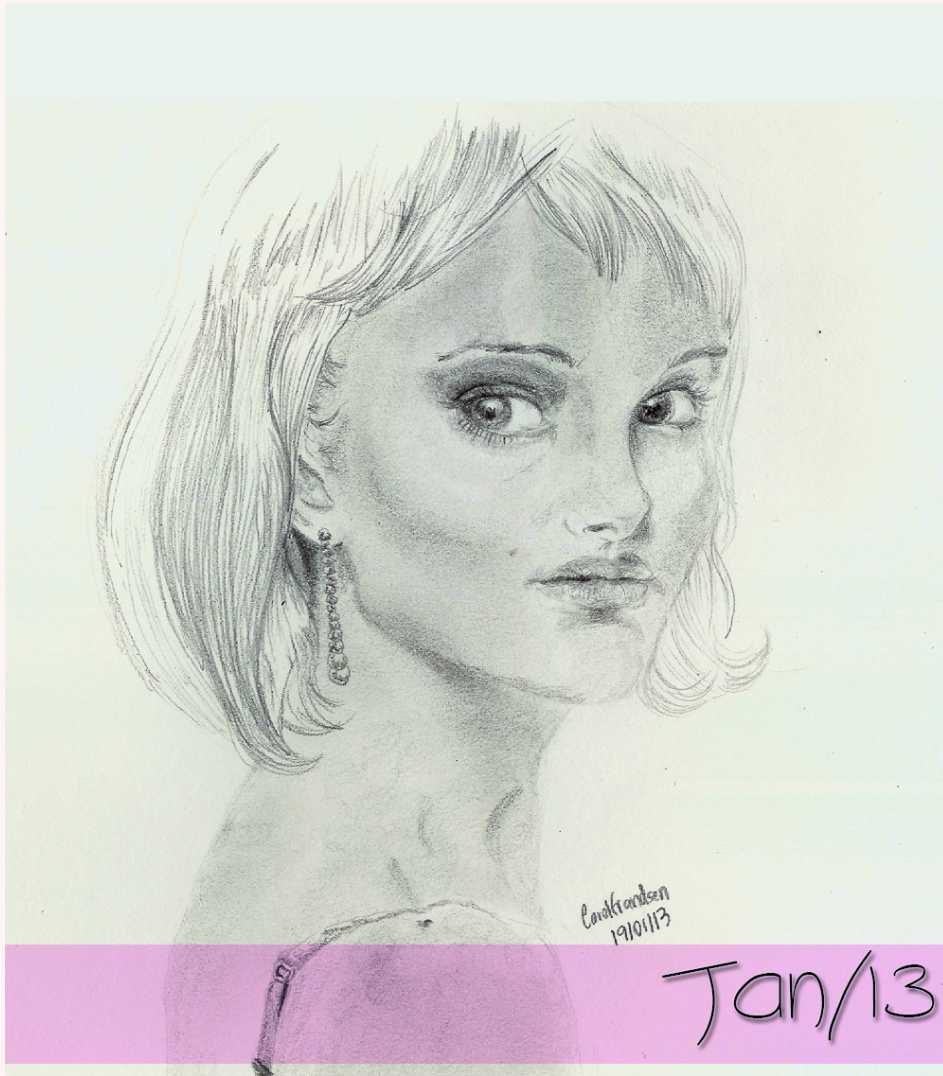




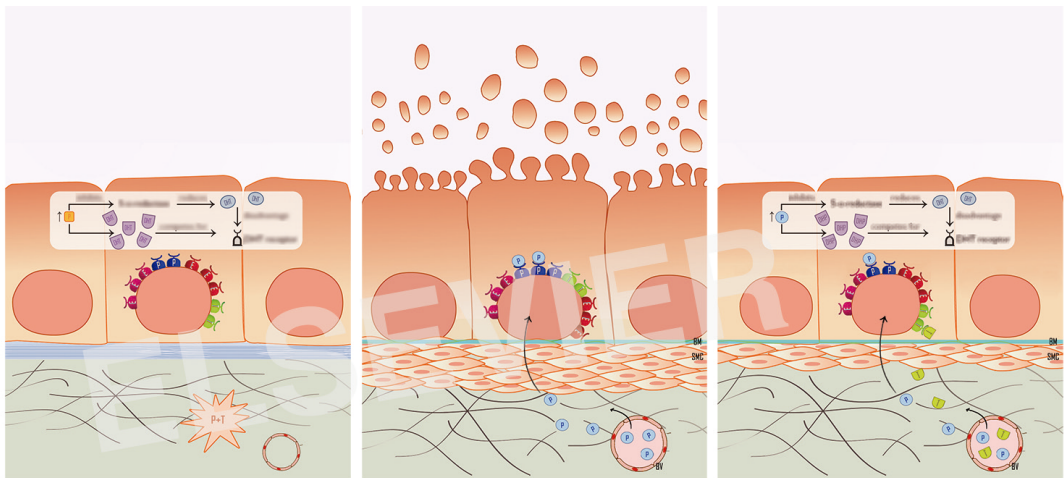
6/5/24

Print de tela do álbum do facebook com os estudos de fevereiro de 2013



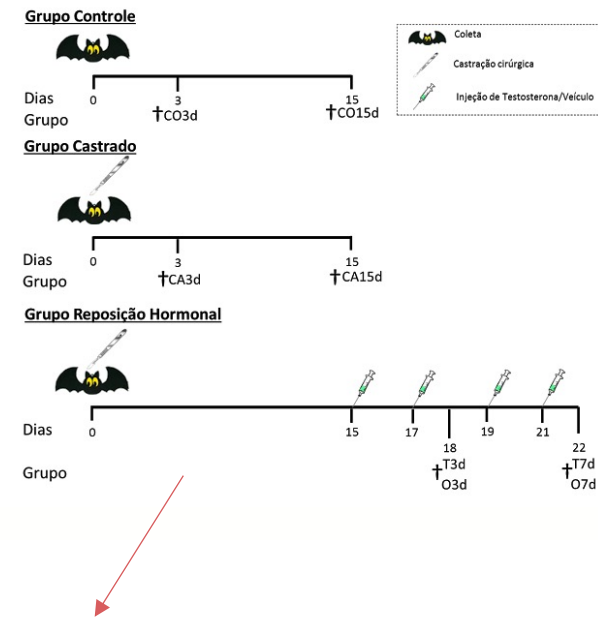




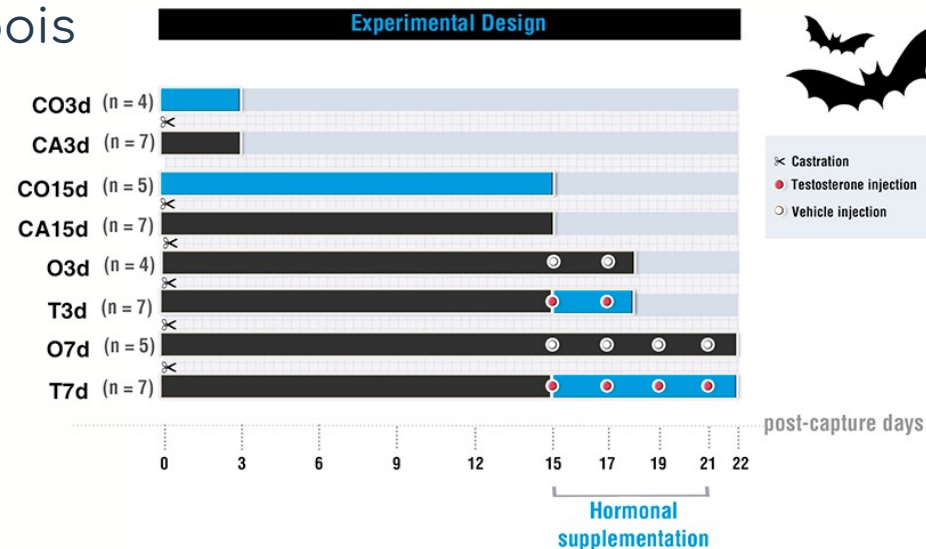


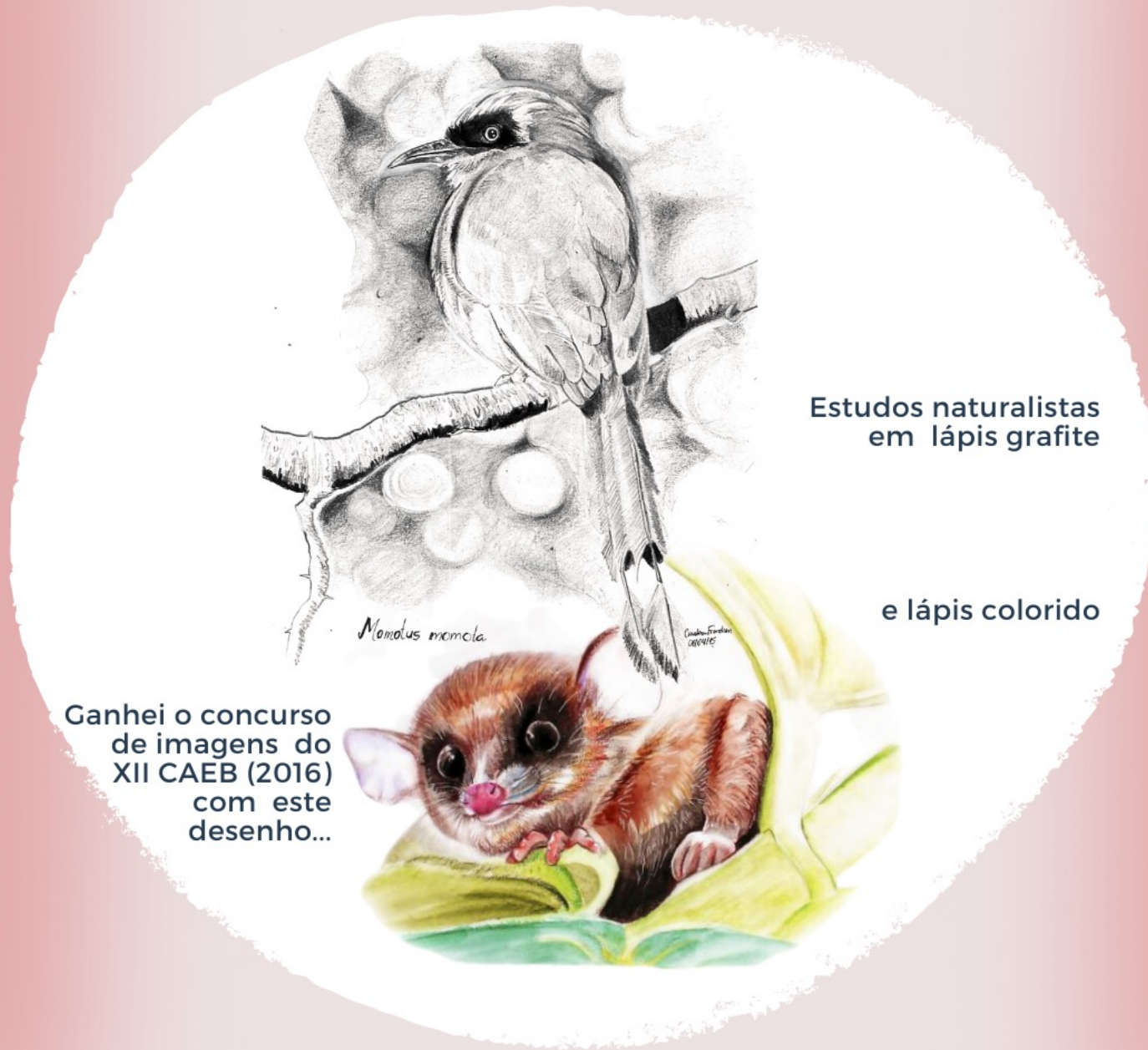
doi:10.1016/j.lfs.2013.02.005  
 Life Sciences  
 ELSEVIER

antes



depois





Estudos naturalistas  
em lápis grafite

e lápis colorido

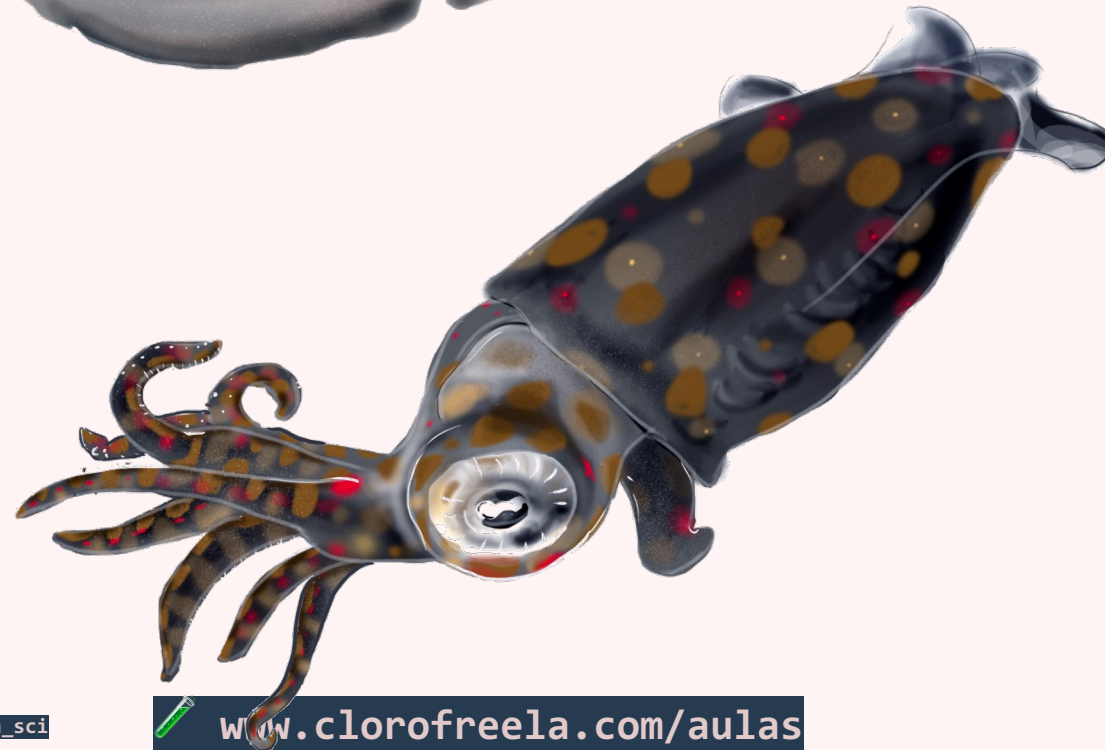
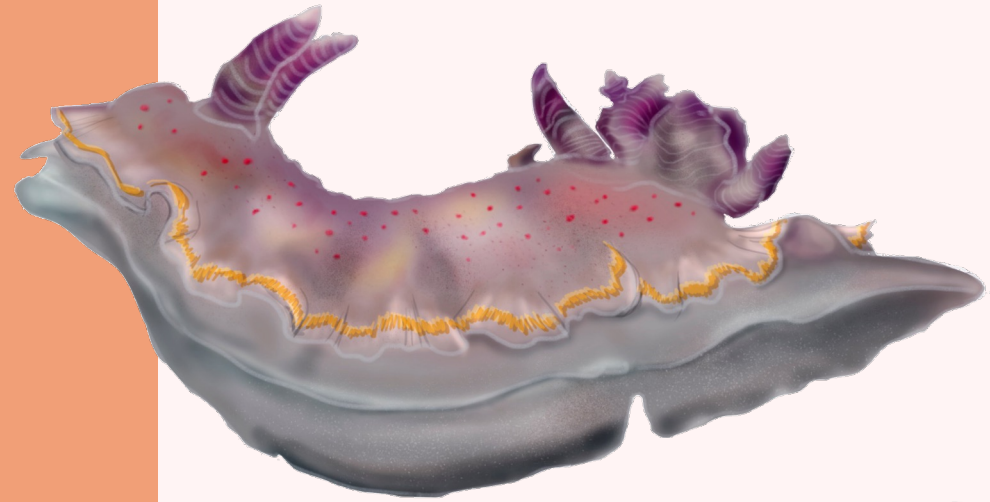
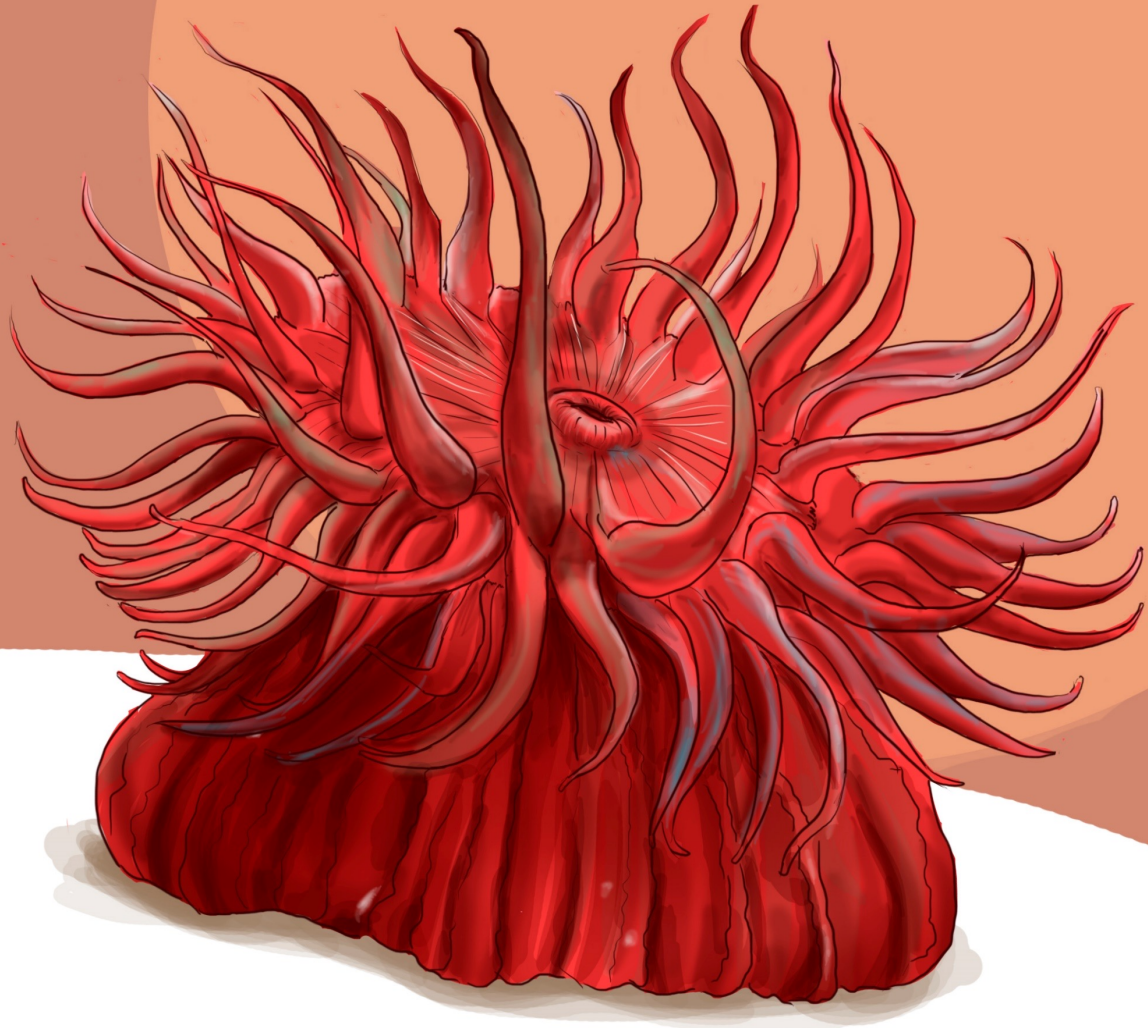
Ganhei o concurso  
de imagens do  
XII CAEB (2016)  
com este  
desenho...



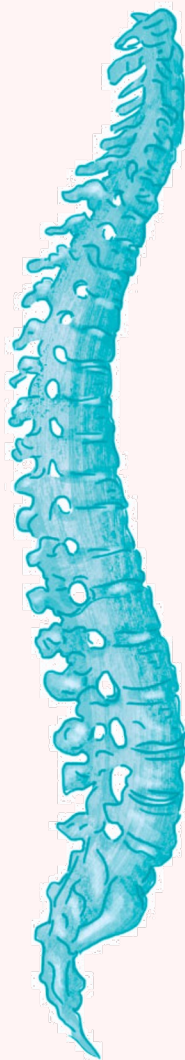
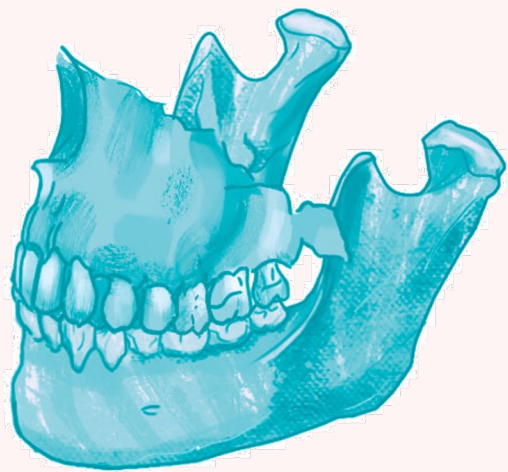
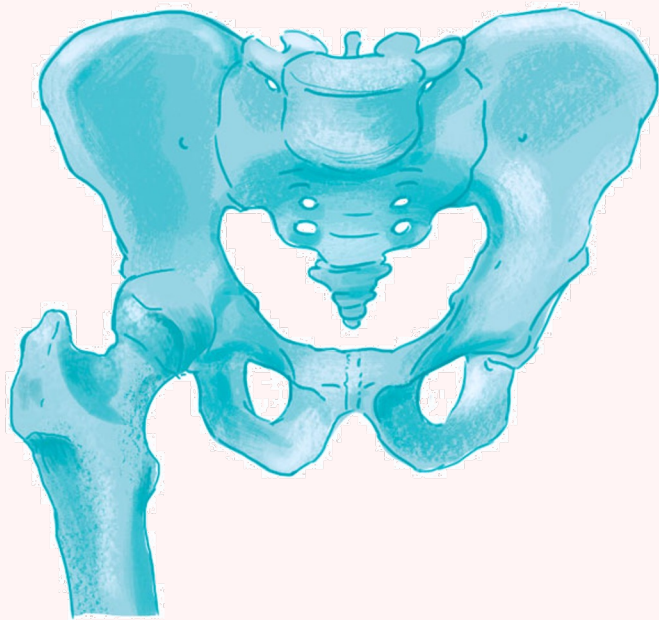




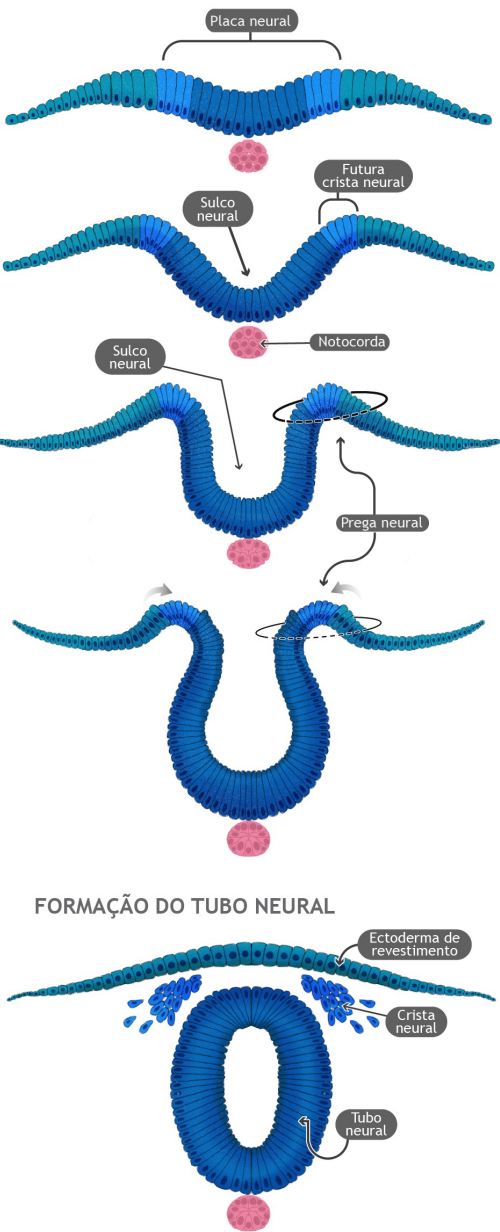
*Bunodosoma caissarum*





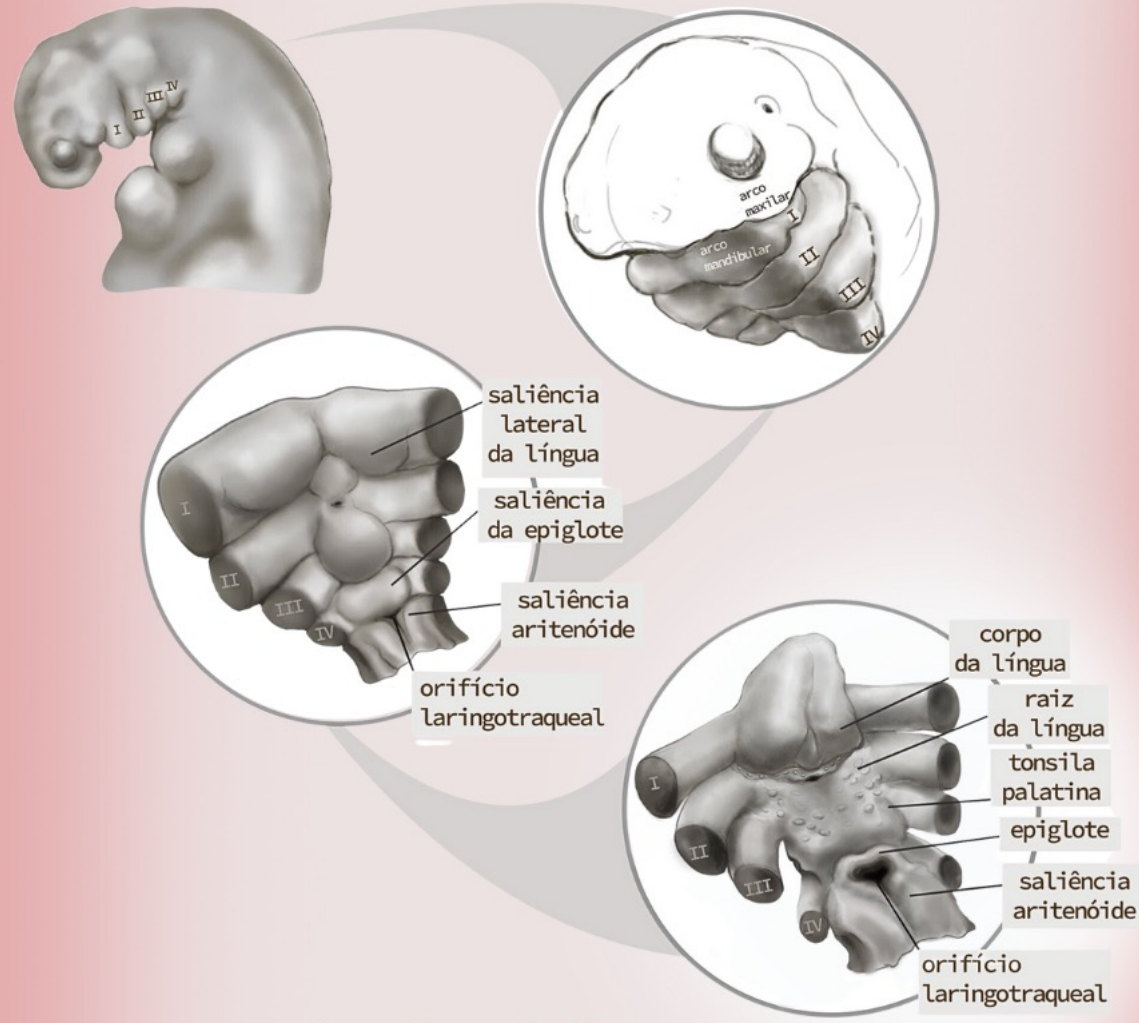






FORMAÇÃO DO TUBO NEURAL

corte transversal medial de um embrião, mostrando apenas os derivados ectodérmicos e a notocorda (rosa)

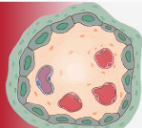


Uma figura do livro **Embriologia Humana Essencial**



## MEMBRANA PLACENTÁRIA

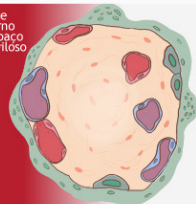
Sangue materno no espaço intervilloso



C

10 SEMANAS

Sangue materno no espaço intervilloso

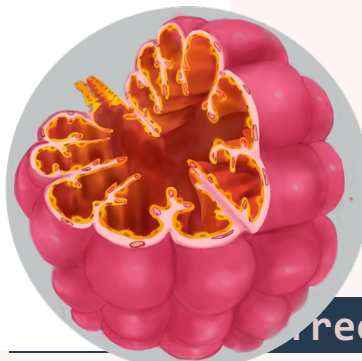
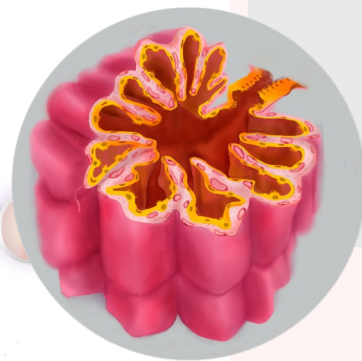


D

À TERMO

(CORTE TRANSVERSAL)

VILOSIDADE CORIÔNICA

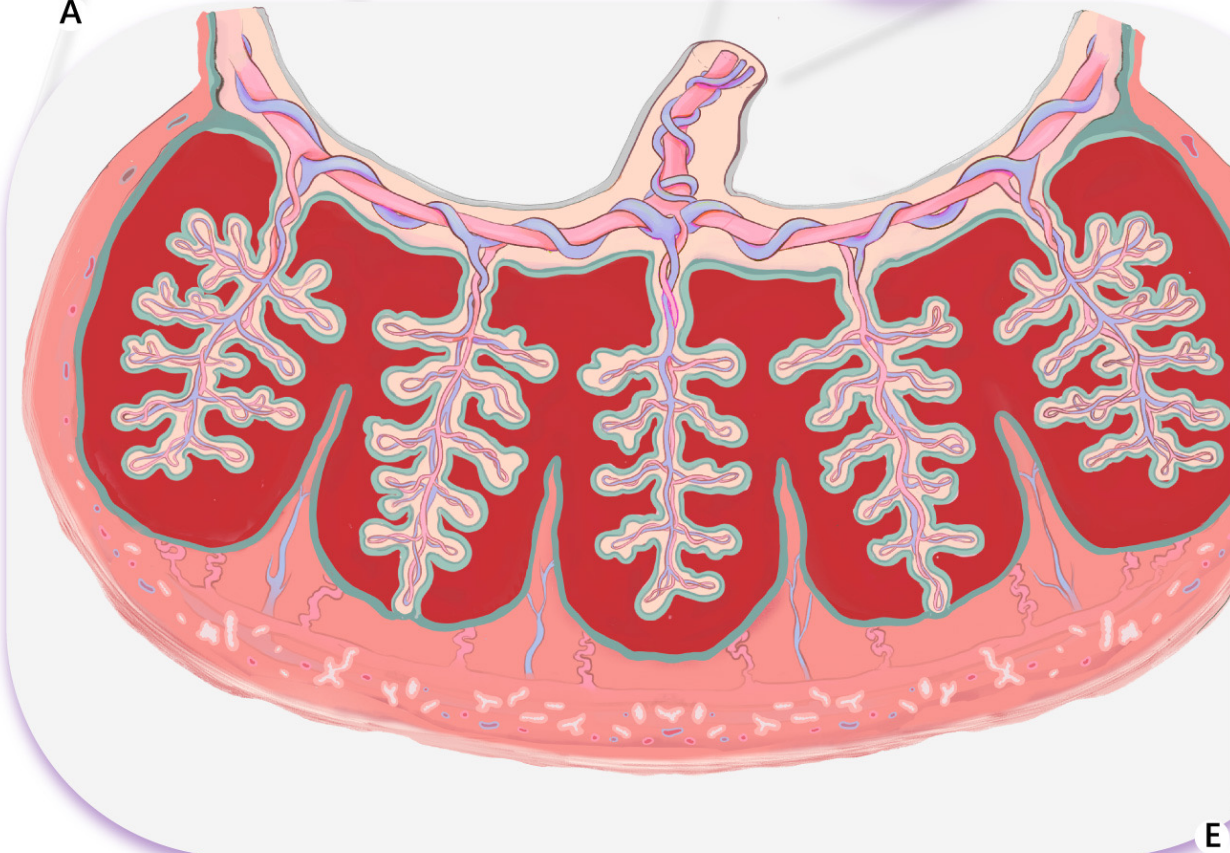


## ESTRUTURA DA PLACENTA

A

B

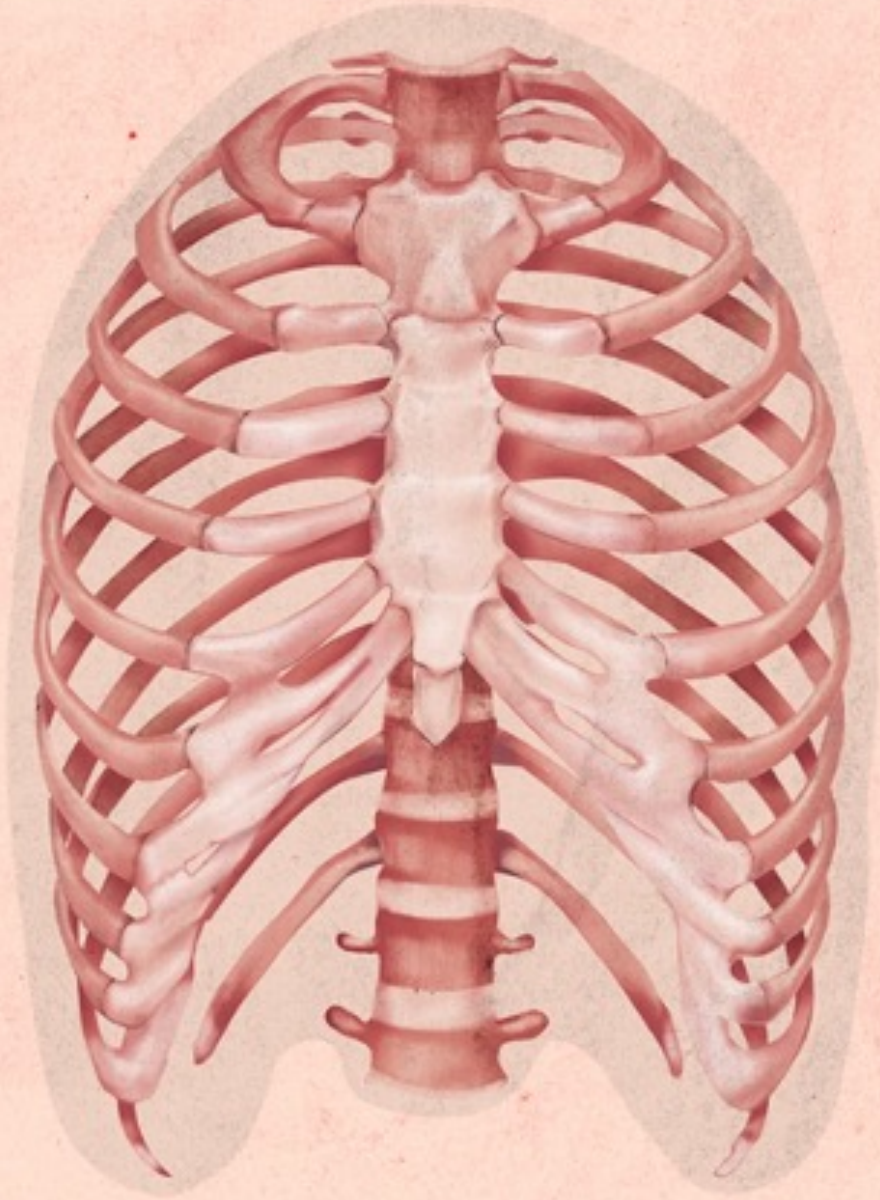
CORDÃO UMBILICAL  
(CORTE TRANSVERSAL)



E

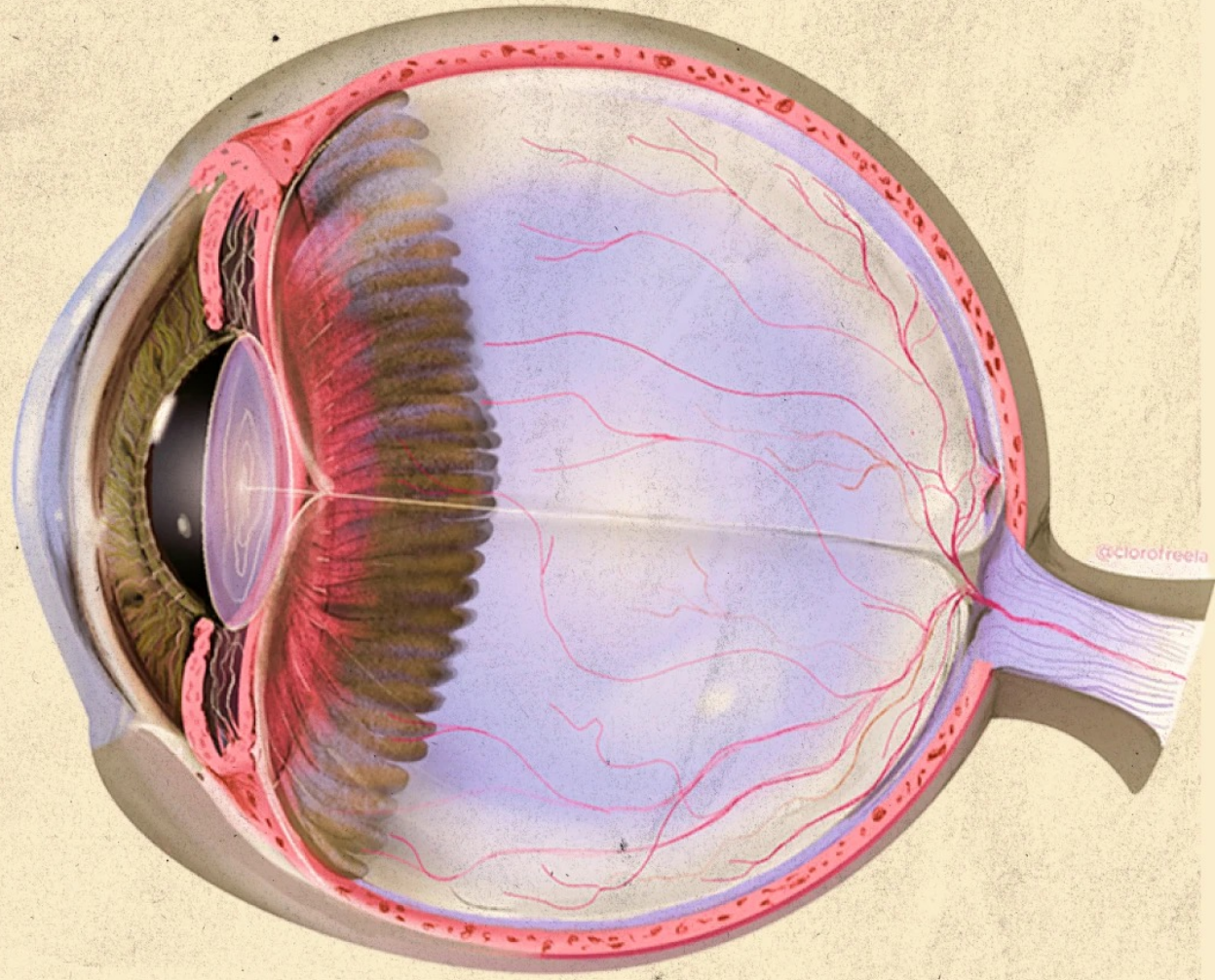






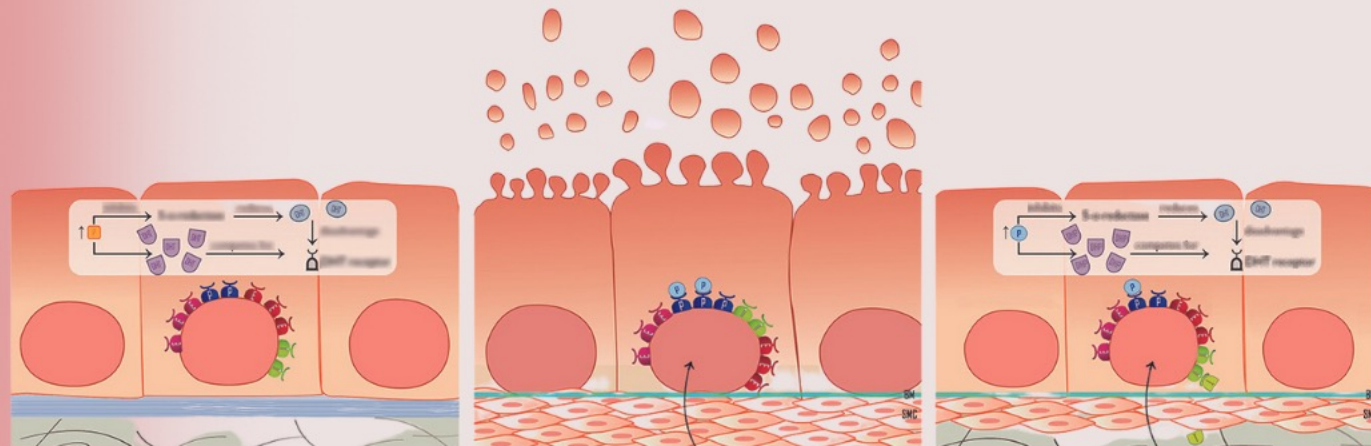
05/06/2024

@clorofreela



@clorofreela

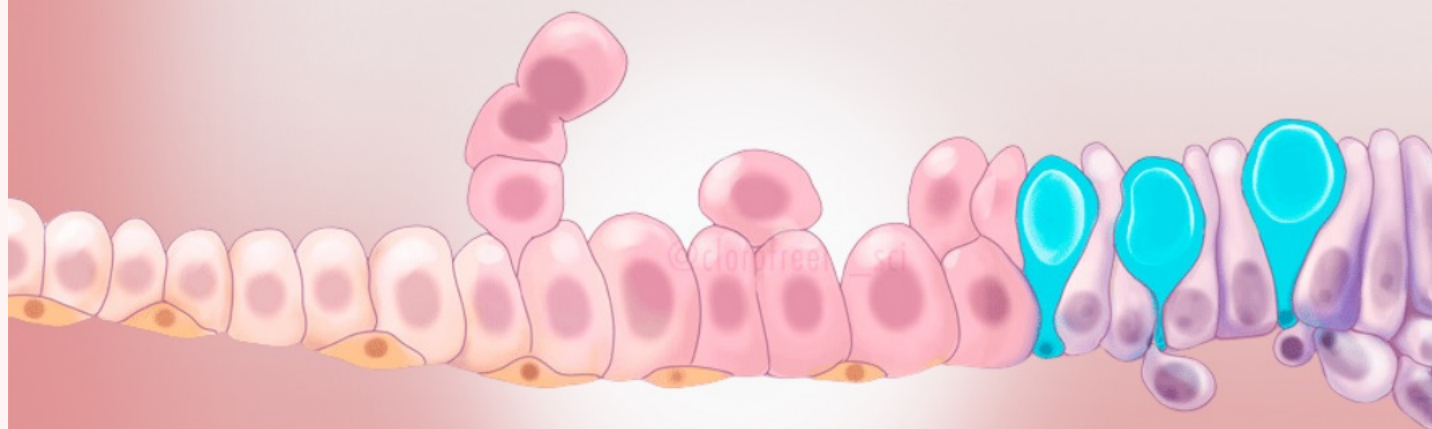




Epitélio prostático da primeira leva de ilustrações científicas...

**Progesterone restores the female prostate activity in ovariectomized gerbil(...)**

© 2013 Shinohara FZ et al.  
DOI: 10.1016/j.lfs.2013.02.005



... e das mais recentes!

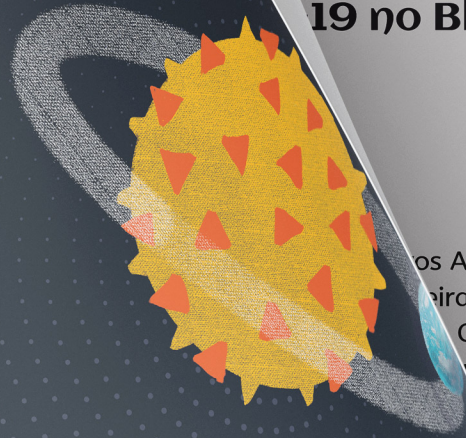


LINHA

Um giro de divulgação científica sobre a COVID-19

# DE FUNDO

Um giro de divulgação científica sobre a COVID-19 no Blogs Unicamp



os Arnt  
eira da Costa  
Carneiro  
nior

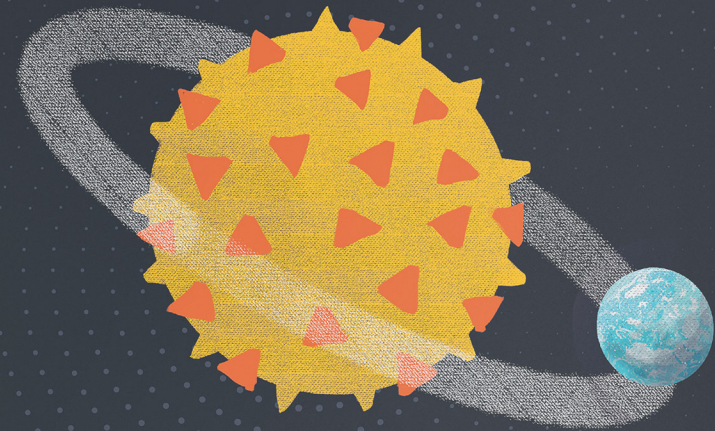
Organizadores:  
Ana de Medeiros Arnt  
Carolina Frandsen Pereira da Costa  
Erica Mariosa Moreira Carneiro  
Maurílio Bonora Junior  
Jaqueline Nichi



05/06/2024

# LINHA DE FUNDO

Um giro de divulgação científica sobre a COVID-19 no Blogs Unicamp



Organizadores:  
Ana de Medeiros Arnt  
Carolina Frandsen Pereira da Costa  
Erica Mariosa Moreira Carneiro  
Maurílio Bonora Junior  
Jaqueline Nichi







O que fazemos?

Produção de Conteúdos

Organização de conteúdos de Divulgação em Ciências, Educação em Ciências, Biologia e Saúde



QUANDO AS CRIANÇAS DEVEM SER VACINADAS CONTRA A **Pólio**?

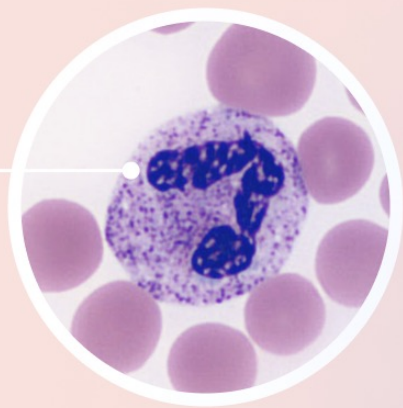


Se perdeu algum desses prazos, busque a Unidade Básica de Saúde mais próxima para atualizar a caderneta de vacinação da criança e receber orientações sobre o período mais adequado para a dose seguinte.

fonte: Conselho Nacional de Secretários de Saúde (CONASS) | Campanha #VacinaMais



El\*Falaf  
WikiCommons

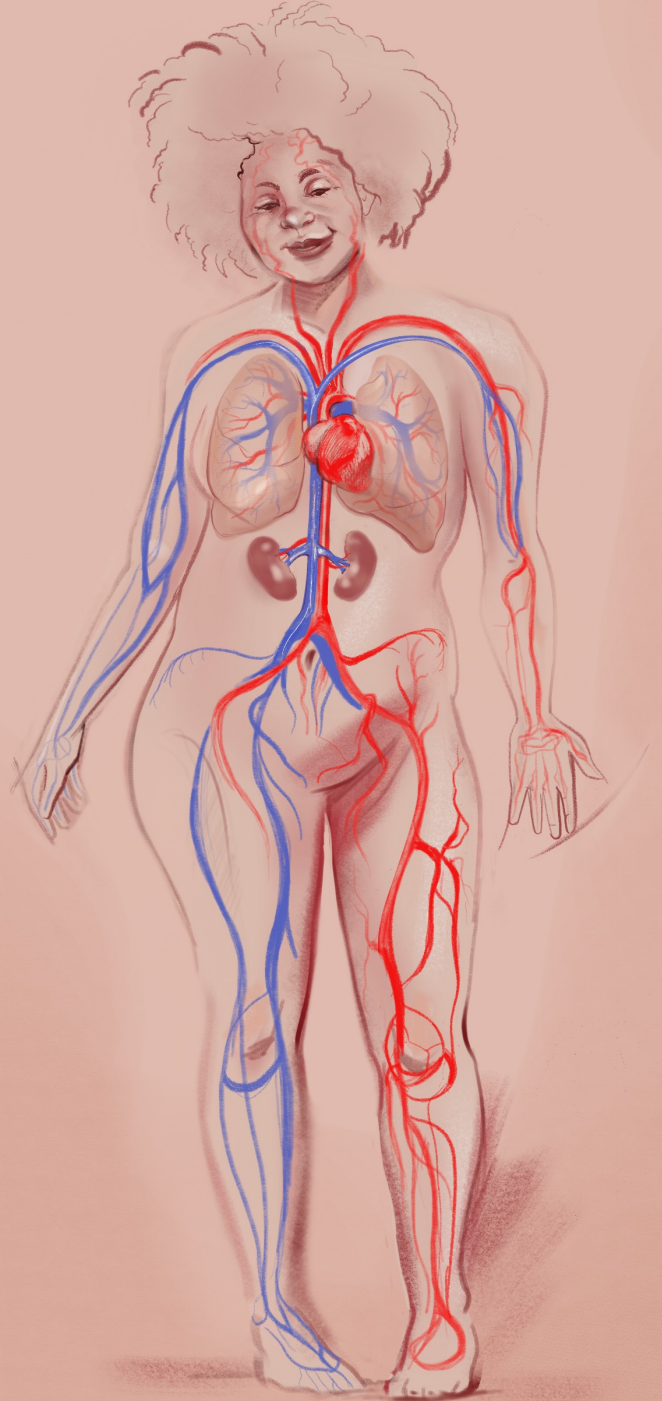


## Neutrófilo

Faz parte da primeira linha de defesa do organismo: fagocitam, matam e digerem fungos e bactérias.







1

Our circulatory system comprises the heart, veins, and arteries. But it does not act on its own: this system - also called cardiovascular - **CONSTANTLY INTERACTS WITH OTHER ORGANS**, such as the lungs and kidneys, where gas exchange and blood filtration take place.

2

The main function of the circulatory system **IS TO DISTRIBUTE NUTRIENTS AND OXYGEN TO THE ORGANS** of the body through the blood, thus ensuring the full functioning of our body.

3

In the body at rest, our blood is pumped by the heart throughout the body in just **1 MINUTE**.

4

This pumping is done continuously, and the blood circulates only in one direction in our body

5

Within the heart itself, blood flow between the atria and ventricles is from top to bottom. This control is carried out by **THE HEART VALVES**.

6

**THE KIDNEYS** aren't part of the circulatory system, but are directly related to the heart. They act as a filter and receive approximately **1.2 LITERS OF BLOOD PER MINUTE**, which is about a quarter of the blood pumped by the heart. It can be said that the kidneys filter all of a person's blood about 12 times an hour

7

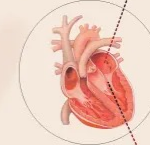
**BODY BLOOD FLOW**

**VENOUS BLOOD** (poor in oxygen) arrives from human tissues to the heart through the right atrium, which corresponds to the upper right chamber.

Then, the blood reaches the right ventricle - the lower chamber - through the **TRICUSPID VALVE**, which controls the flow between the atrium and the right ventricle.

From there, venous blood travels to the **LUNGS**, where it is oxygenated. This exchange of carbon dioxide for oxygen in blood cells (red blood cells) is called hematoxis.

On the left side of the heart, the pulmonary veins **CARRY OXYGENATED ARTERIAL BLOOD** from the lungs to the left atrium - the upper chamber.



It transfers this renewed blood to the left ventricle through the **MITRAL VALVE**, which controls the flow on the left side of the heart.

In the left ventricle, oxygenated blood is carried by the aorta artery to be **REDISTRIBUTED TO THE BODY**.

# HEAD TO TOES CONNECTION

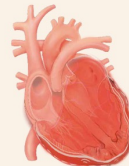




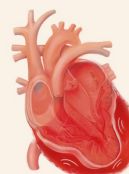
## ACUTE MYOCARDIAL INFARCTION

Also known as a "HEART ATTACK", it happens when the flow of blood to the heart is interrupted, usually due to the accumulation of fat in the arteries. It is estimated that, in Brazil, there are 300 to 400 thousand heart attacks per year, resulting in 60 thousand of deaths. It is the **BIGGEST CAUSE OF DEATH IN BRAZIL**, according to the Ministry of Health.

**MAIN SYMPTOMS OF HEART ATTACK**  
 Severe chest pain, which may radiate to the arm  
 Dizziness  
 Cold sweat  
 Malaise



weak heartbeats



normal heartbeats

## CARDIAC FAILURE

The problem arises when the heart muscles can no longer pump blood effectively. The disease is **MORE COMMON IN THOSE WITH HYPERTENSION**, as this condition weakens the heart muscle. Unfortunately, hypertension affects about a third of the world's adult population and is also associated with other problems, such as heart attack, stroke, chronic kidney disease, and cardiac arrhythmias.

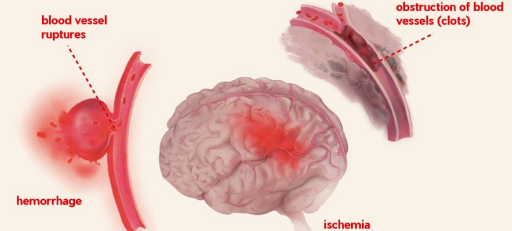
### MAIN SYMPTOMS OF HEART FAILURE

Progressive fatigue  
 Swelling in legs and feet  
 Dry cough at night  
 Shortness of breath

## CEREBRO-VASCULAR ACCIDENT (CVA / STROKE)

It happens when the blood flows to the brain changes, leading to the death of nerve cells. There are two types of stroke: the **MOST COMMON** (85% of cases) is ischemic when there is obstruction of blood vessels.

When a vessel ruptures, hemorrhagic stroke occurs, which is **MORE SERIOUS**. This disease affects more men and is one of the main causes of death, disability, and hospitalization in the world.

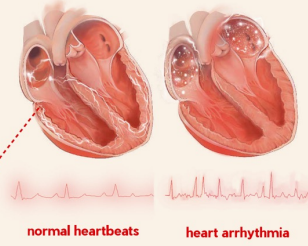


## ATRIAL FIBRILLATION

This heart arrhythmia causes rapid and irregular heartbeats. Fortunately, the ventricles are able to filter out most of these chaotic electrical impulses. The biggest problem is the high risk of thrombi (or clots) forming in the heart, which can travel to the brain and cause a stroke. **ADVANCED AGE IS A MAJOR RISK FACTOR**: the worldwide prevalence of the disease jumps from about 0.4% in the general population to about 2% in people over 60 years of age.

**NORMAL HEART RATE:**  
 the atrium beats 70 to 80 times per minute

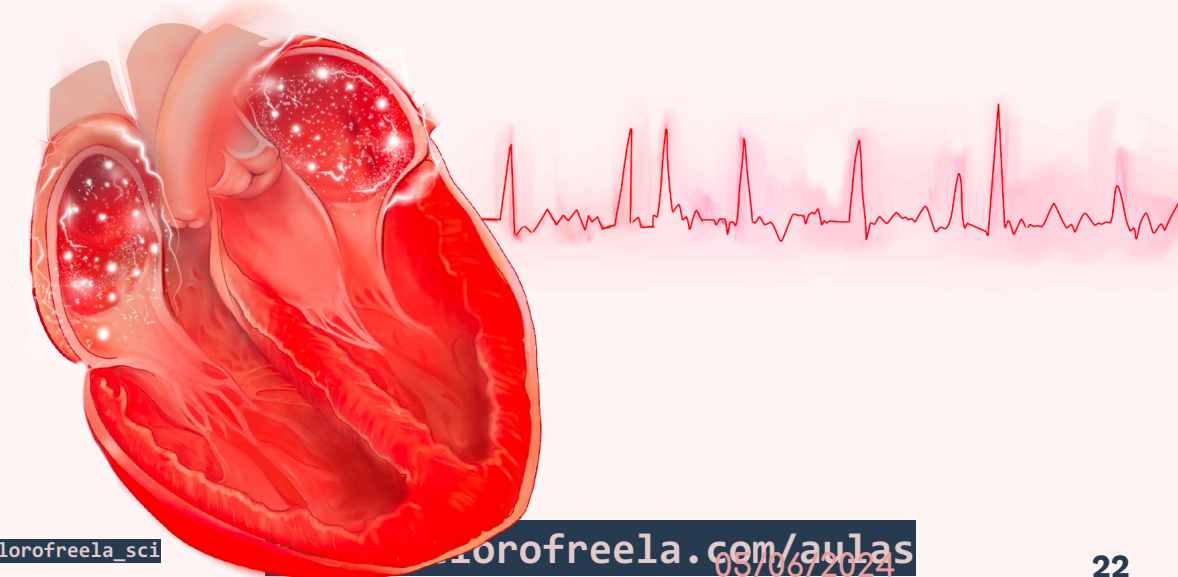
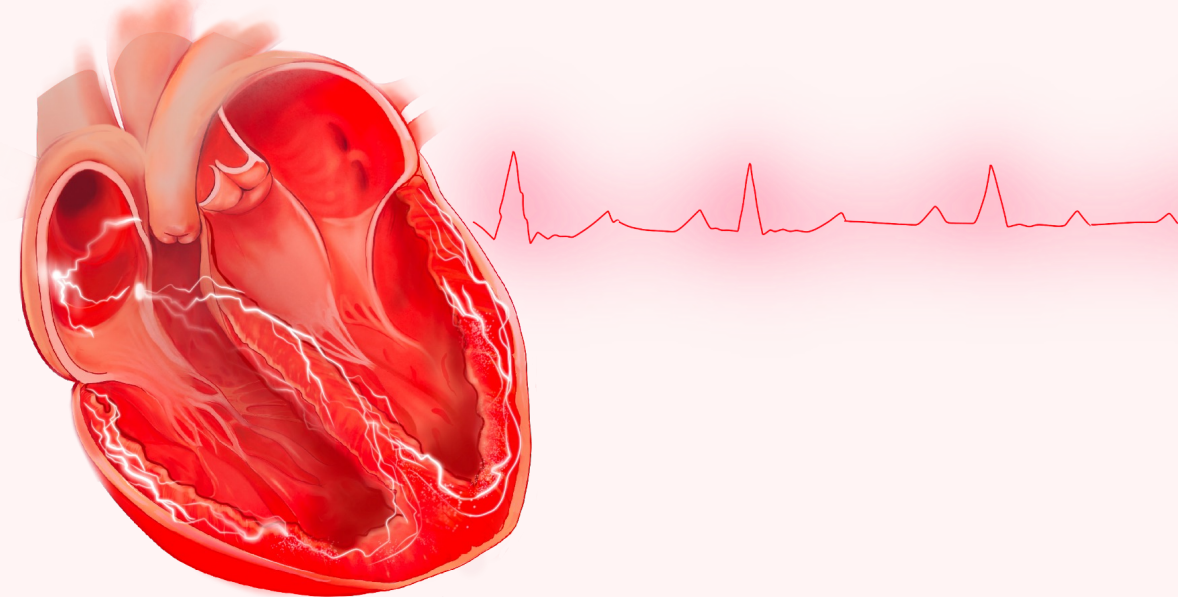
**ATRIAL FIBRILLATION (HIGH RESPONSE):**  
 up to 600 contractions per minute



## CARDIOVASCULAR DISEASES ARE THE LEADING CAUSE OF DEATH AND DISABILITY IN BRAZIL AND WORLDWIDE.

According to the Brazilian Society of Cardiology (SBC), about 14 million Brazilians have heart disease and about 400,000 die each year from some heart condition, representing **30% OF ALL DEATHS IN THE COUNTRY**.

# WHAT AFFLICTS YOUR HEART?







**1 FECHE SUA MÃO E OLHE PARA ELA.**  
 Este é aproximadamente o tamanho do seu coração. Seu peso é de cerca de 300 GRAMAS.  
 Este cavidade são separadas ao meio, na direção vertical, por uma estrutura chamada septo.

**2 QUATRO CAVIDADES**  
 O coração possui quatro cavidades, as câmaras:  
 A) átrio direito  
 B) átrio esquerdo  
 C) ventrículo direito  
 D) ventrículo esquerdo

**3 100 MIL VEZES AO DIA**  
 É quantas vezes o coração contrai, com a capacidade média de bombear 5 litros de sangue por minuto. Isto tudo acontece por meio de água condensada de quatro bilhões de cardiomiócitos, as fibras musculares cardíacas. Estamos falando de um trabalho impressionante: o coração é o músculo QUE MAIS FAZ ESFORÇO FÍSICO em nosso corpo.

**4 PERICÁRDIO**  
 Membrana que reveste e protege o coração. Essa membrana contém fluidos lubrificantes de movimentação sem perda de estabilidade anatômica.

**5 TUM-TUM**  
 O som conhecido com o coração, remete ao ciclo produzido pelo batimento das suas **VALVULAS** e **CHAMADAS** "Sístole" e "Diástole". Esse som é produzido pelo fluxo de sangue que retorna ao coração, seja em que o coração se contraia, seja em que o músculo se relaxe.

**6 BPM**  
 O número de um adulto bate em média de 70 a 80 vezes por minuto, e isso varia com a idade.  
 Aumentar em situações de estresse ou exercício físico.  
 Caso a pessoa vá para a cama, o coração bate em média de 60 a 70 vezes por minuto.  
**3 BILHÕES DE VEZES** ao decorrer da vida.

**7 FORA DO CORPO**  
 Mesmo fora do corpo, caso se mantenha recebendo aporte de oxigênio, o coração **CONTINUA PULSANDO**. Esse fato é o que possibilita o transplante do órgão incrível.

**ENDOCÁRDIO**  
 Membrana que reveste o coração por dentro.

**MIOCÁRDIO**  
 Músculo responsável por suas contrações.

**7 BILHÕES DE VEZES AO DIA**

**BATE, CORAÇÃO**

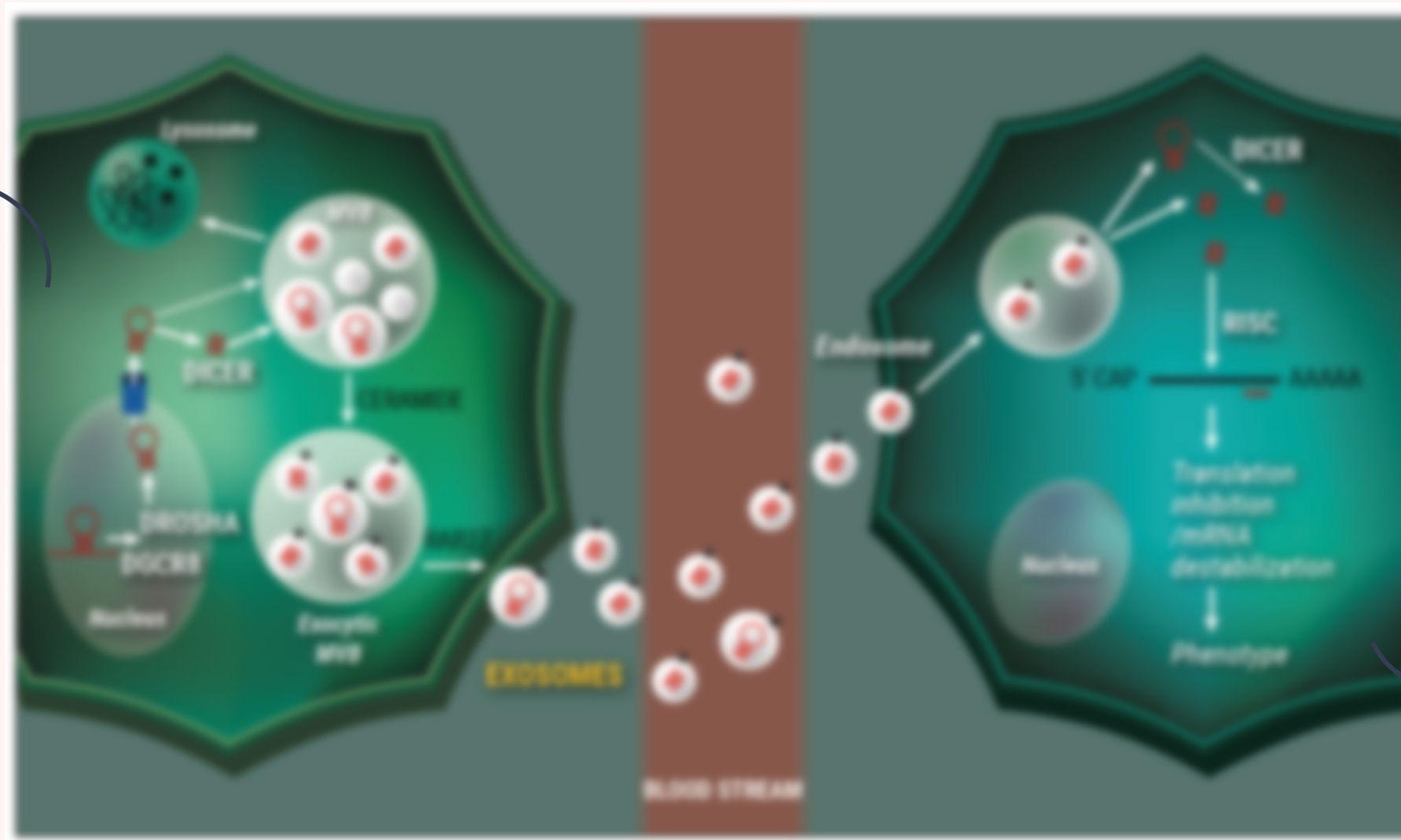
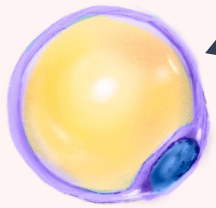
QR Code: [https://www.heart.org.br](#)



# BIÓLOGA ILUSTRADORA?

Proposta de designer não-especialista recebida pelo pesquisador

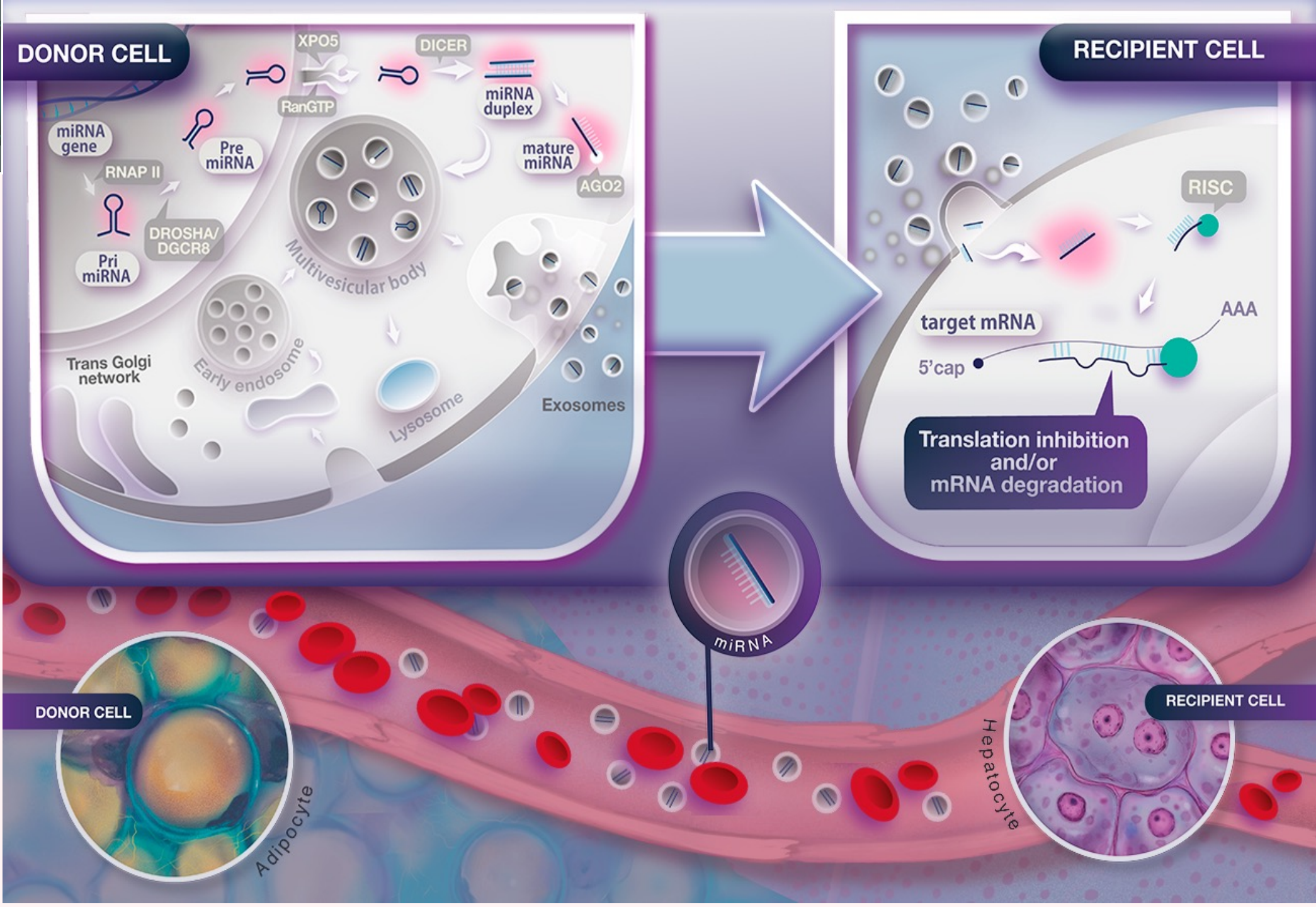
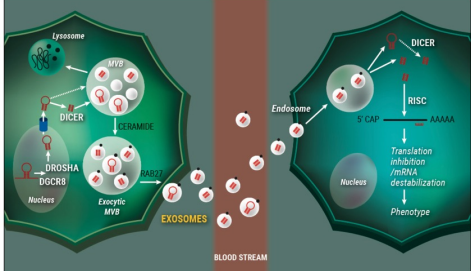
adipócito



hepatócito







Minha proposta inicial



Acervo pessoal





A ilustração científica é uma simbiose entre arte e ciência, na qual beleza estética não é prioridade, mas a capacidade comunicativa é essencial

*Carolina F. Costa*

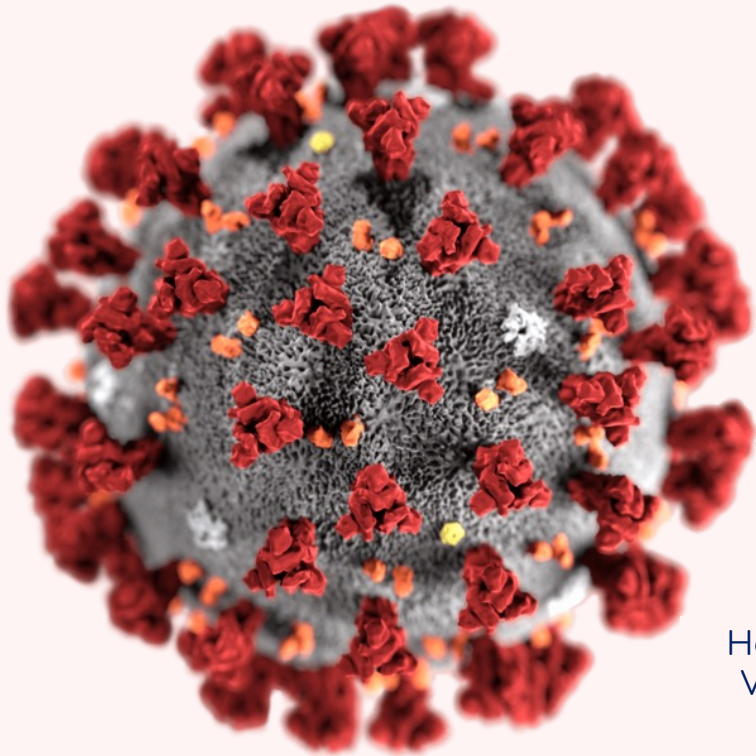
Carolina Fran Instagram: @clorofreela ou @clorofreela\_sci



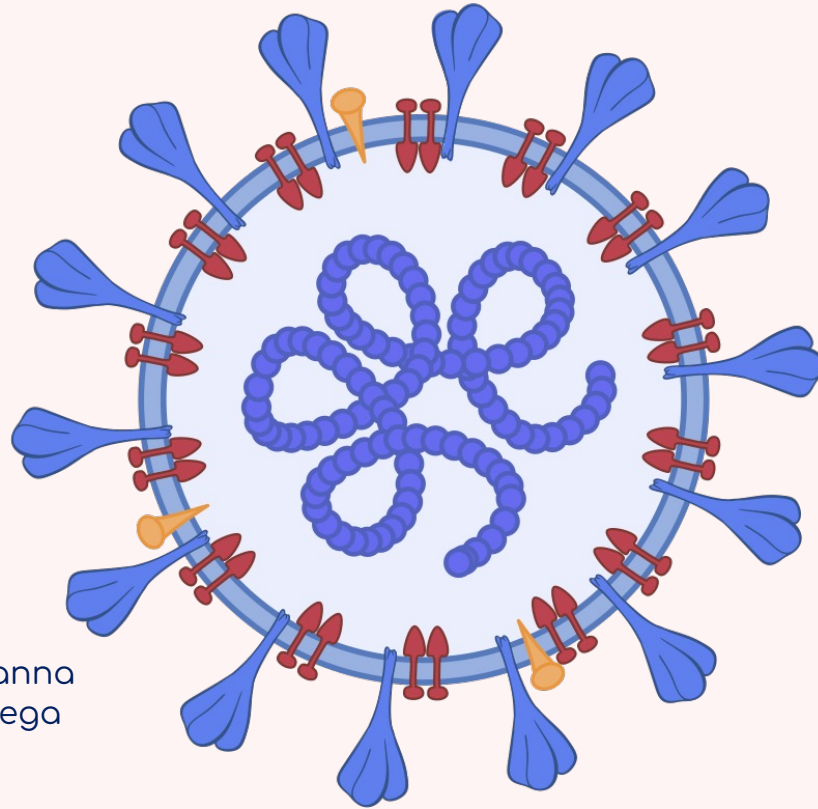
[www.clorofreela.com/aulas](http://www.clorofreela.com/aulas)



**FINALIDADE | MENSAGEM | PÚBLICO-ALVO | VEICULAÇÃO | CAPACIDADE TÉCNICA**



Alissa Eckert, MS; Dan Higgins,  
MAM



Hanna  
Vega



David S.  
Goodsell




**Desenhar é um processo contínuo de aprimoramento**







**Cursos e Recursos: onde estudar  
ilustração científica no **

[clorofreela.com/cursos-ic-br](https://clorofreela.com/cursos-ic-br)



## Institucionais

- ▣ NCBio (Unb - DF)
- ▣ NIC IB-USP (SP)
- ▣ Programa de Ilustração Botânica no Jardim Botânico (RJ)
- ▣ NIC UFLA (MG)
- ▣ Ilustração Científica UFMG
- ▣ Centro de Ilustração Botânica do Paraná (CIBP)

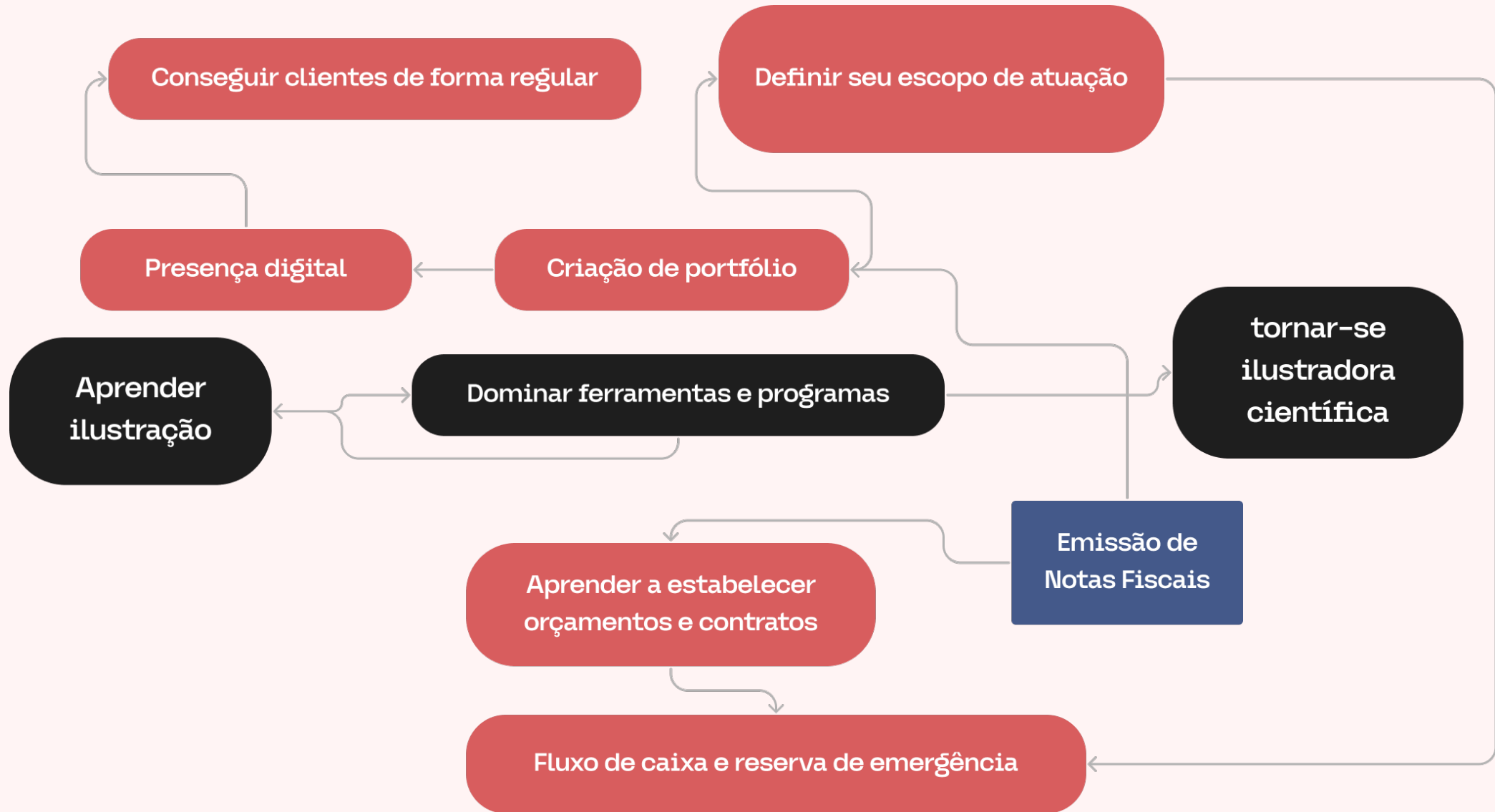
## Aulas particulares

- ▣ Dulce Nascimento
- ▣ Rogério Lupo
- ▣ Vivian Hackbart
- ▣ Diana Carneiro
- ▣ Vanessa Seiko Sugihara
- ▣ Leandro Lopes de Souza
- ▣ Fatima Zagonel

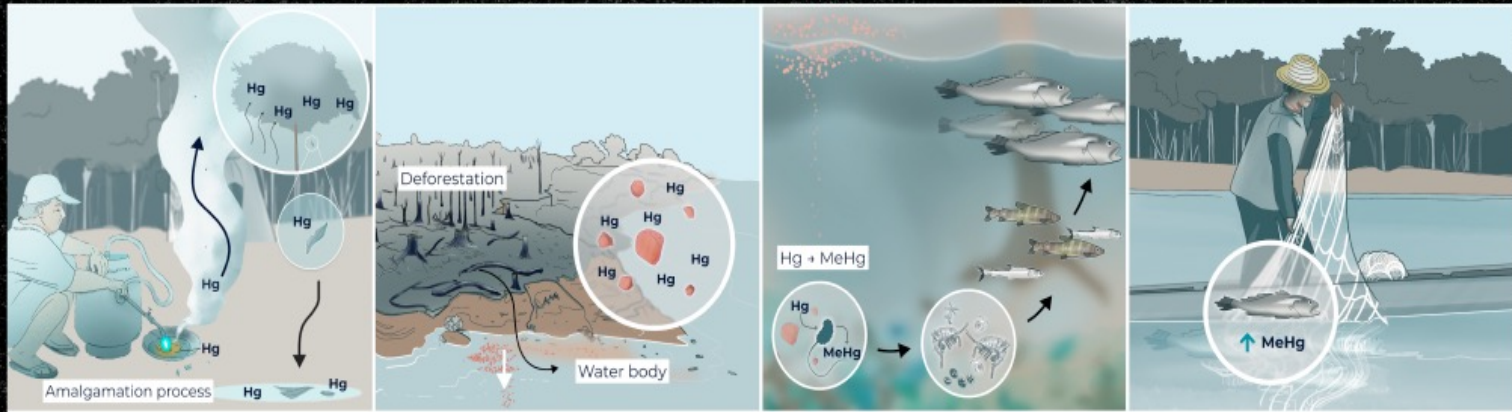
[clorofreela.com/cursos-ic-br](https://clorofreela.com/cursos-ic-br)



# Profissionalização







Mercury is released during the amalgamation process, and most of the gaseous mercury is trapped into the surrounding vegetation and subsequently deposited in the soil.

Most of the mercury that reaches rivers is transported adsorbed to soil particles. Therefore, activities such as deforestation accelerate the erosion process and, consequently, the deposition of mercury into the rivers.

Mercury undergoes sedimentation along watercourses. Under low oxygenation and high organic matter concentrations, particulate mercury transforms into methylmercury, capable of accumulating in the food chain.

Mercury bioaccumulates in the food chain, especially in piscivorous fish. The fish are consumed by local populations, impacting their health.







