

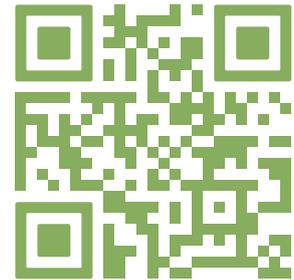


## PROJECT HARUSPEX : How to do speculative biology

### The Formula

# The Formula

To come up with a new organism that could realistically exist you must take certain factors into consideration. Using our knowledge of biology and evolution, we can create a story of how something could develop. In these work sheets, I will be giving you the factors you need to consider to develop your own story.



*Haruspex video:*

## Pressure

*what factors in an environment influence your organism?*

## Origin

*which organism will you be speculating about?*

## Time line

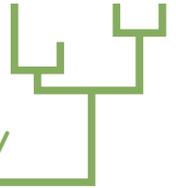
*how does your organism adapt to the pressure?*



Considering these biological facts in a fictional story is called **Speculative Biology**. Following the steps in these worksheets you will be able to come up with your own hypothetically evolved organism.



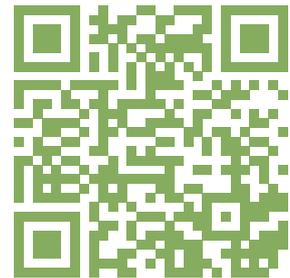
# PROJECT HARUSPEX : How to do speculative biology



## The Pressure

# The Pressure

The way natural selection works is that factors found in an **environment** influence the development of a species. Over generations the genes of the animals that function most efficiently in their environment will persevere. In this part, you will determine and describe which factors will be affecting your organism and how these factors influence the way animals function.



*what is natural selection?*

### Choose your pressure

describe what environmental changes will happen that will affect your organism. Which factors will be influencing development in your story.

what **environment** or **factors/circumstances** do you want to talk about?

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*Example: deserts will become swamps and beaches*

**name organisms** living in similar circumstances (research on internet):

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*Example: tapirs and hippos*

**how are those organisms adapted** to its environment?

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*Example: tapirs and hippos possess a lot of body fat and short to no fur and short and thick legs*



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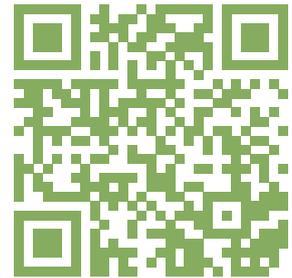
## The Origin

# The Origin

To **start to speculate** about how something could develop you must pick a subject you will be speculating about. In biology things, don't develop from nothing and always have a point of origin.

Much like how bats evolved from gliding animals, who evolved from tree dwelling animals, you will choose the **ancestor** of your **new organism**.

In this part, you will be choosing the starting point where you will be speculating from.



*what is classification ?*

### Choose your organism

pick an organism: \_\_\_\_\_

*example: dromedary*

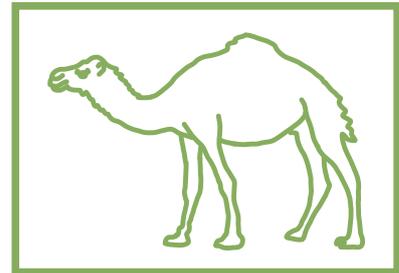
give scientific name (use wikipedia): \_\_\_\_\_

*example: Camelus dromedarius*

name minimum 3 others that are closely related:

(both living relatives and ancestors use the info found on wiki)

\_\_\_\_\_  
*example: living are alpacas and lamas,  
the extinct is Oxydactylus (giraffe like camel)*



*example: dromedary*

### Knowing its niche

where does it live/what is their habitat?

\_\_\_\_\_  
\_\_\_\_\_

*Example: Desert regions*

what does it eat?

herbivore  carnivore  omnivore  nectivore

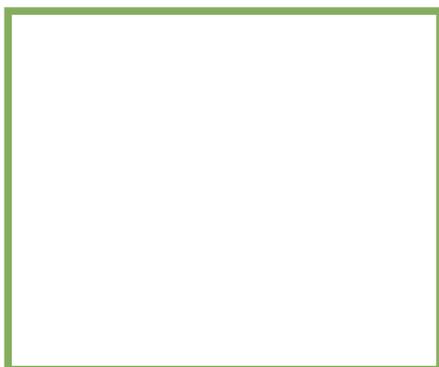
other: \_\_\_\_\_

*Example: Dromedaries are herbivores*

what features allow this animal to function in its environment?

\_\_\_\_\_  
\_\_\_\_\_

*Example: Humps to store resources, lashes against sand, flat toes and long limbs for walking on loose sand*



add image of your chosen organism



# PROJECT HARUSPEX : How to do speculative biology

## The Timeline

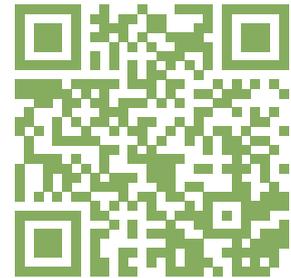
# The Timeline

The process of two different organisms evolving similar traits is called **convergent evolution**. (for explanation see video)

By taking your original animal and imagining how it would look if it evolved to have similar adaptations as the organism dealing with different pressures, you can create your own organism.

This organism will have diverged from the original species and will have convergently evolved to look similar to the ones that have adapted to deal with those pressures.

**In the most basic terms the organism you picked in origin will have the adaptations of the organisms you found in pressure.**



*what is  
convergent evolution?*

## Build the story of your organism

How does your organism adapt to the pressure over time.

how does your organism develop the traits of your examples in pressure :

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*Example: by having shorter fur more body fat and a rounder more robust body form.*

describe the new living circumstances (niche) your animal inhabits:

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*Example: the samnit camel lives in swamps and marsh lands. It has short hair and lots of body fat to deal with its mostly aquatic life style. It has lost the hump of its ancestors and feeds mostly on aquatic plants .*



## PROJECT HARUSPEX : How to do speculative biology



### The Timeline

# The Timeline

Make a model or sketch of your organism

give your evolved organism a new name and a scientific Latin name

**common name:** \_\_\_\_\_

**scientific name:** \_\_\_\_\_

*Example:*

name: Samnit Camel

scientific name: Camelidae Palusei (the family name stays the same as the original organism)