Meet the PhyloGenome initiative!

Welcome to PhyloGenome, where science and gaming converge to create an innovative learning experience. PhyloGenome is an active learning platform that blends genomics with the excitement of collectible cards and strategic gameplay. In this special edition, students dive into the world of conservation genomics in endangered species while sharpening their critical thinking, collaboration and scientific literacy.

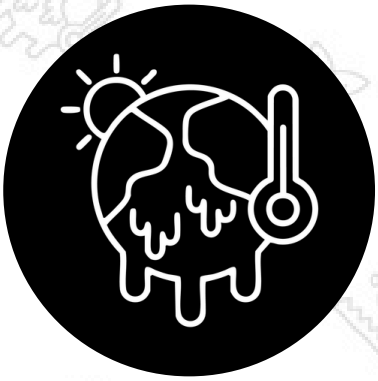
PhyloGenome is more than a project; it's a community. We invite you to explore, learn, and contribute. Connect with us as we redefine genomics education through open-access, participatory learning. Together, let's shape the future of genomics education!

Explore it at
phylogenome.omicsuab.org

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Logging



Climate Change



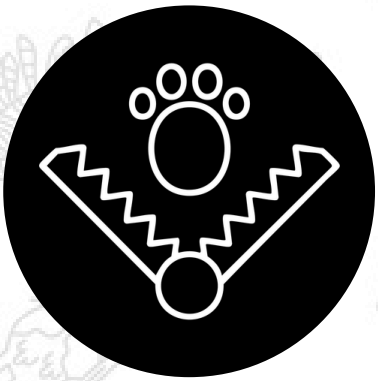
Pollution



Agriculture



Invasive Species



Hunting

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Critically Endangered

Conservation Status progress card

CR

< CRITICALLY ENDANGERED >

CR

You can play *Species cards* of the **Critically Endangered** category.

Play 3 **Critically Endangered** *Species cards* to unlock the **Endangered** progress card and expand your conservation impact.

Critically Endangered species are at an extremely high risk of extinction as a result of rapid population declines of 80 to more than 90 percent over the previous 3 generations, a current population size of <50 individuals, or other factors.

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Endangered

Conservation Status progress card

EN

< ENDANGERED >

EN

You can play *Species cards* of the **Critically Endangered and Endangered** categories.

Play 3 **Endangered** *Species cards* to unlock the **Vulnerable** progress card and expand your conservation impact.

Endangered species are at a very high risk of extinction as a result of rapid population declines of 50 to more than 70 percent over the previous 3 generations, a current population size of <250 individuals, or other factors.

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Vulnerable

Conservation Status progress card

VU

< VULNERABLE >

VU

You can play *Species cards* of the **Critically Endangered, Endangered and Vulnerable** categories.

Play 3 **Vulnerable** *Species cards* to unlock the **Least Concern** progress card and expand your conservation impact.

Vulnerable species are at a high risk of extinction as a result of rapid population declines of 30 to more than 50 percent over the previous 3 generations, a current population size of <1,000 individuals, or other factors.

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Least Concern

Conservation Status progress card

LC

< LEAST CONCERN >

LC

You can play Species cards of the **Critically Endangered, Endangered, Vulnerable and Least Concern** categories.

Celebrate biodiversity by protecting species across **all conservation status** and ensuring ecosystem balance.

Least Concern species are widespread and abundant, but monitoring is still essential to prevent future declines and maintain healthy ecosystems.

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Vancouver Island Marmot

Marmota vancouverensis

CR



1
POINT

The Vancouver I. Marmot has a move of 1.

Genetic diversity: 0.23

Date of assessment: Mar. 2, 2017

No. of mature individuals: 90

Habitats: Rocky areas, Plains, Forest

Animalia, Chordata, Mammalia

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Saint Lucian Whiptail

Cnemidophorus vanzoi

CR



1
POINT

The Saint L. Whiptail has a jump of 1.

Genetic diversity: 0.03

Date of assessment: July 22, 2015

No. of mature individuals: ~1,000

Habitats: Forest, Plains

Animalia, Chordata, Reptilia

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Chilean Woodstar

Eulidia yarrellii

CR



1
POINT

The Chilean Woodstar has a move of 1.

Genetic diversity: 0.18
Date of assessment: Aug. 11, 2020
No. of mature individuals: 210
Habitats: Desert, Plains

Animalia, Chordata, Aves

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Mangrove Finch

Geospiza heliobates

CR



2
POINTS

The Mangrove Finch has a move of 1.

Genetic diversity: 0.44

Date of assessment: July 19, 2021

No. of mature individuals: ~30

Habitat: Forest

Animalia, Chordata, Aves

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Pied Tamarin

Saguinus bicolor

CR



2
POINTS

The Pied Tamarin has a move of 1.

Genetic diversity: 0.55

Date of assessment: Jan. 26, 2015

No. of mature individuals: ~30,000

Habitat: Forest

Animalia, Chordata, Mammalia

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Cuban Crocodile

Crocodylus rhombifer

CR



2
POINTS

The Cuban Crocodile has a move of 1.

Genetic diversity: 0.56
Date of assessment: Feb. 28, 2022
No. of mature individuals: 2,400
Habitats: Forest, Plains, Wetlands

Animalia, Chordata, Reptilia

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Anegada Rock Iguana

Cyclura pinguis

CR



2
POINTS

The Anegada Rock Iguana has a jump of 1.

Genetic diversity: 0.55

Date of assessment: Nov. 2, 2019

No. of mature individuals: ~400

Habitats: Forest, Plains, Marine

Animalia, Chordata, Reptilia

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Mojave Desert Tortoise

Gopherus agassizii

CR



3
POINTS

The Mojave D. Tortoise has a move of 1.

Genetic diversity: 0.74

Date of assessment: Oct. 1, 2020

No. of mature individuals: ~13,000

Habitat: Plains

Animalia, Chordata, Reptilia

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Cozumel Harvest Mouse

Reithrodontomys spectabilis

CR



3
POINTS

The Cozumel H. Mouse has a move of 1.

Genetic diversity: 0.73

Date of assessment: Apr. 24, 2017

No. of mature individuals: 152

Habitat: Forest

Animalia, Chordata, Mammalia

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Ridgway's Hawk

Buteo ridgwayi

CR



3
POINTS

The Ridgway's Hawk has a jump of 1.

Genetic diversity: 0.78

Date of assessment: Aug. 14, 2020

No. of mature individuals: 322

Habitat: Forest

Animalia, Chordata, Aves

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Jico Deer Mouse

Habromys simulatus

CR



3
POINTS

The Jico Deer Mouse has a move of 1.

Genetic diversity: 0.74

Date of assessment: July 11, 2016

No. of mature individuals: 50

Habitat: Forest

Animalia, Chordata, Mammalia

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Galapagos Penguin

Spheniscus mendiculus

EN



1
POINT

The Galapagos Penguin has a move of 1.

Genetic diversity: 0.04

Date of assessment: Aug. 21, 2020

No. of mature individuals: 1,200

Habitat: Marine

Animalia, Chordata, Aves

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Roatán Spiny-tailed Iguana

Ctenosaura oedirhina

EN



1
POINT

The Roatán S. Iguana has a move of 1.

Genetic diversity: 0.39

Date of assessment: June 5, 2018

No. of mature individuals: ~5,000

Habitats: Forest, Plains

Animalia, Chordata, Reptilia

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El Oro Parakeet

Pyrrhura orcesi

EN



2
POINTS

The El Oro Parakeet has a move of 1.

Genetic diversity: 0.67

Date of assessment: Aug. 12, 2020

No. of mature individuals: ~500

Habitat: Forest

Animalia, Chordata, Aves

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Darwin's Fox

Lycalopex fulvipes

EN



2
POINTS

The Darwin's Fox has a move of 1.

Genetic diversity: 0.55

Date of assessment: Mar. 4, 2016

No. of mature individuals: ~1,750

Habitats: Forest, Plains

Animalia, Chordata, Mammalia

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Worthen's Sparrow

Spizella wortheni

EN



3
POINTS

The Worthen's Sparrow has a move of 1.

Genetic diversity: 0.72

Date of assessment: Oct. 1, 2017

No. of mature individuals: ~750

Habitat: Plains

Animalia, Chordata, Aves

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Giant Kangaroo Rat

Dipodomys ingens

EN



3
POINTS

The Giant Kangaroo Rat has a move of 1.

Genetic diversity: 0.73

Date of assessment: July 11, 2016

No. of mature individuals: ~100,000

Habitats: Savanna, Plains

Animalia, Chordata, Mammalia

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Marbled Murrelet

Brachyramphus marmoratus

EN



4
POINTS

The Marbled Murrelet has a move of 1.

Genetic diversity: 0.78

Date of assessment: July 27, 2020

No. of mature individuals: ~260,000

Habitats: Forest, Wetlands, Marine

Animalia, Chordata, Aves

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Wattled Curassow

Crax globulosa

EN



4
POINTS

The Wattled Curassow has a move of 1.

Genetic diversity: 0.84

Date of assessment: Sept. 22, 2022

No. of mature individuals: ~1,750

Habitat: Forest

Animalia, Chordata, Aves

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Amazonian Manatee

Trichechus inunguis

VU



3
POINTS

The Amazonian Manatee has a move of 1.

Genetic diversity: 0.73

Date of assessment: Feb. 28, 2016

No. of mature individuals: ~18,000

Habitats: Wetlands, Marine

Animalia, Chordata, Mammalia

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Loggerhead Turtle

Caretta caretta

VU



4
POINTS

The Loggerhead Turtle has a move of 1.

Genetic diversity: 0.80

Date of assessment: Aug. 23, 2015

No. of mature individuals: ~50,000

Habitat: Marine

Animalia, Chordata, Reptilia

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Sprague's Pipit

Anthus spragueii

VU



4
POINTS

The Sprague's Pipit has a move of 1.

Genetic diversity: 0.78

Date of assessment: June 10, 2019

No. of mature individuals: 1,400,000

Habitat: Plains

Animalia, Chordata, Aves

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I’iwi

Drepanis coccinea

VU



4
POINTS

The Iiwi has a move of 1.

Genetic diversity: 0.77

Date of assessment: July 23, 2020

No. of mature individuals: ~375,000

Habitat: Forest

Animalia, Chordata, Aves

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Reindeer

Rangifer tarandus

VU



4
POINTS

The Reindeer has a move of 1.

Genetic diversity: 0.75

Date of assessment: Dec. 24, 2015

No. of mature individuals: 2,890,400

Habitats: Forest, Plains

Animalia, Chordata, Mammalia

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Eastern Box Turtle

Terrapene carolina

VU



5
POINTS

The Eastern Box Turtle has a move of 2.

Genetic diversity: 0.86

Date of assessment: Aug. 1, 2010

No. of mature individuals: ~10,000

Habitats: Wetlands, Plains, Forest

Animalia, Chordata, Reptilia

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Ovenbird

Seiurus aurocapilla

LC



5
POINTS

The Ovenbird has a jump of 2.

Genetic diversity: 0.76

Date of assessment: Oct. 16, 2020

No. of mature individuals: 26,000,000

Habitat: Forest

Animalia, Chordata, Aves

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Guanaco

Lama guanicoe

LC



6
POINTS

The Guanaco has a jump of 2.

Genetic diversity: 0.84

Date of assessment: Feb. 3, 2016

No. of mature individuals: 1,000,000

Habitat: Plains

Animalia, Chordata, Mammalia

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Hooded Warbler

Setophaga citrina

LC



7
POINTS

The Hooded Warbler has a jump of 2.

Genetic diversity: 0.91

Date of assessment: Oct. 26, 2020

No. of mature individuals: 5,200,000

Habitat: Forest

Animalia, Chordata, Aves

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Savannah Sparrow

Passerculus sandwichensis

LC



7
POINTS

The Savannah Sparrow has a move of 2.

Genetic diversity: 0.90

Date of assessment: Nov. 6, 2020

No. of mature individuals: 170,000,000

Habitats: Marine, Plains, Wetlands

Animalia, Chordata, Aves

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Scarlet Macaw

Ara macao

LC



7
POINTS

The Scarlet Macaw has a move of 2.

Genetic diversity: 0.89

Date of assessment: Aug. 19, 2022

No. of mature individuals: ~275,000

Habitats: Savanna, Forest

Animalia, Chordata, Aves

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Clear-Cut Catastrophe

Event card



Play **Clear-Cut Catastrophe** on top of a *Species card* threatened by *Logging*.

Discard the *Species card* beneath **Clear-Cut Catastrophe.**

Greedy corporations clear forests for profit, leaving species with nowhere to go. But hey, at least the shareholders are happy—right?

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Deforestation Ban

Event card



Play **Deforestation Ban** beneath a *Species card* threatened by *Logging*.

The *Species card* on top of **Deforestation Ban** cannot be discarded.

New laws protect forests, giving species a chance to recover and thrive. Forests get a lifeline, and species get a fresh start.

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Poacher's Paradise

Event card



Play **Poacher's Paradise** on top of a *Species card* threatened by *Hunting & Trapping.*

Discard the *Species card* beneath **Poacher's Paradise.**

Illegal hunting spikes, pushing species closer to extinction. When the demand for exotic trophies rises, species pay the ultimate price.

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Anti-Poaching Task Force

Event card



Play **Anti-Poaching Task Force** beneath a *Species card* threatened by *Hunting & Trapping*.

The *Species card* on top of **Anti-Poaching Task Force** cannot be discarded.

Rangers patrol tirelessly, keeping poachers at bay and species safe.

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Monoculture Menace

Event card



Play **Monoculture Menace** on top of a *Species card* threatened by *Agriculture*.

Discard the *Species card* beneath **Monoculture Menace.**

Vast fields replace habitats, leaving no room for wildlife. Monocultures: because who needs biodiversity when you can have endless rows of corn?

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Sustainable Farming Initiative

Event card



Play **Sustainable Farming Initiative** beneath a *Species card* threatened by *Agriculture*.

The *Species card* on top of **Sustainable Farming Initiative** cannot be discarded.

Eco-friendly farming practices restore habitats, protecting vulnerable species.

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Rising Temperatures

Event card



Play **Rising Temperatures** on top of a *Species card* threatened by *Climate Change*.

Discard the *Species card* beneath **Rising Temperatures.**

Heatwaves and droughts make survival impossible for some species. The planet is turning into a sauna, and not the relaxing kind.

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Carbon Capture Project

Event card



Play **Carbon Capture Project** beneath a *Species card* threatened by *Climate Change*.

The *Species card* on top of **Carbon Capture Project** cannot be discarded.

Forests and wetlands work overtime, absorbing carbon and giving species a cleaner future.

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Ecosystem Overrun

Event card



Play **Ecosystem Overrun** on top of a *Species card* threatened by *Invasive Species*.

Discard the *Species card* beneath **Ecosystem Overrun.**

Non-native species outcompete locals, driving them to extinction. It's like a bad roommate situation, but for entire ecosystems.

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Biocontrol Program

Event card



Play **Biocontrol Program** beneath a *Species card* threatened by *Invasive Species*.

The *Species card* on top of **Biocontrol Program** cannot be discarded.

Natural predators keep invasive species in check, safeguarding native species.

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Toxic Spill

Event card



Play **Toxic Spill** on top of a *Species card* threatened by *Pollution*.

Discard the *Species card* beneath **Toxic Spill.**

Chemicals leak into ecosystems, poisoning everything in their path. Pollution doesn't discriminate—it ruins ecosystems one chemical at a time.

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Cleanup Campaign

Event card



Play **Cleanup Campaign** beneath a *Species card* threatened by *Pollution*.

The *Species card* on top of **Cleanup Campaign** cannot be discarded.

Community efforts remove harmful pollutants, creating a safer environment for species.

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International Conference

Event card



Discard **International Conference**.

Move a *Species card* to any compatible position.

You have been invited to an international conference with all expenses fully covered; feast on the free food and drinks. Maybe you can also attend a seminar if you have spare time.

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Financial Cut

Event card



Play **Financial Cut** beneath a *Species card*.

New *Species cards* cannot be played adjacent to the *Species card* on top of **Financial Cut**.

A groundbreaking discovery has recently captured the scientific community's focus. All ongoing research on this species is postponed.

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Out of Order

Event card



Play **Out of Order** in front of a player.

The player with **Out of Order** cannot play any *Species cards*. Discard **Out of Order** at the start of your next turn.

The machines have broken down and will not be repaired until next Monday. Take the opportunity to relax. When was the last time you took a vacation?

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Nobel Prize

Event card



Play **Nobel Prize** after a player has played an *Event card*.

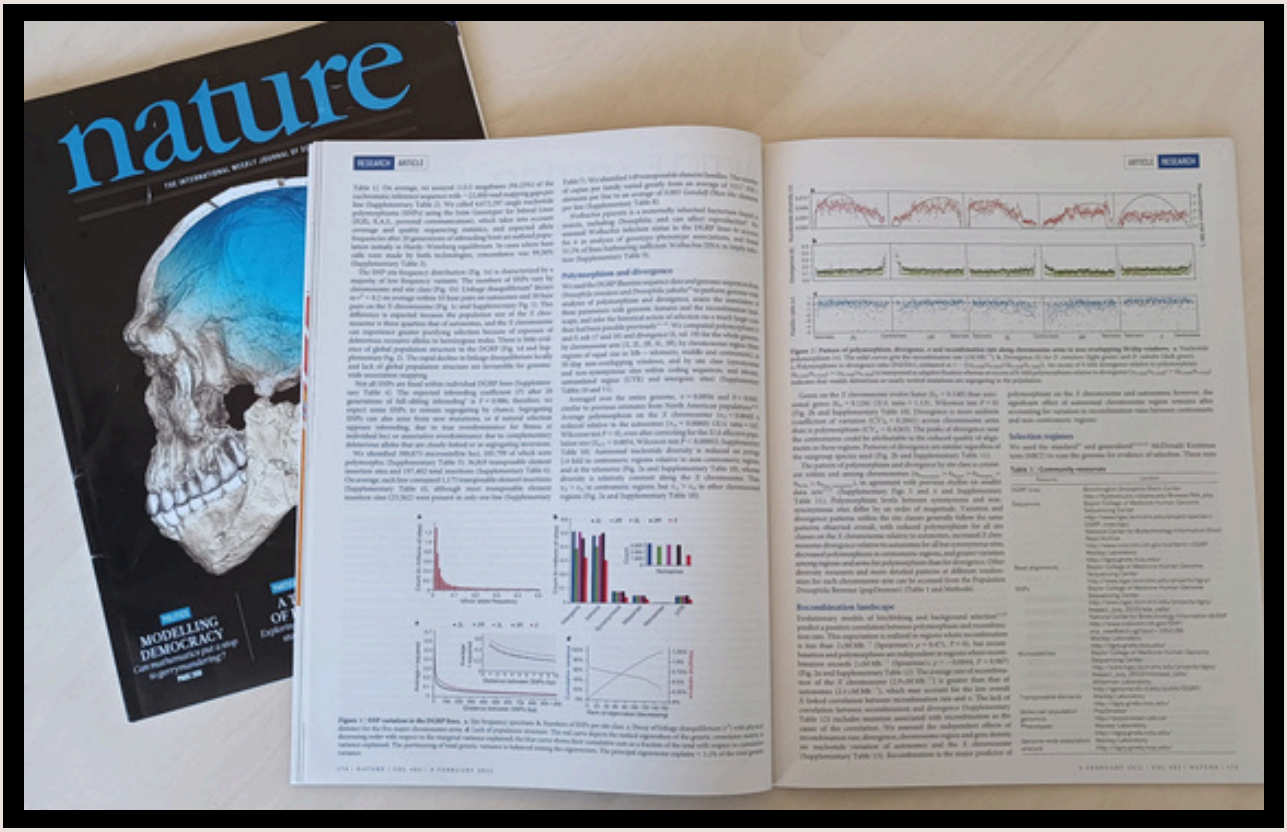
Discard the previously played *Event card* without carrying out its effect.

As a Nobel Prize winner, you'll find that people follow you unconditionally. If you express disagreement, they'll likely do the same! Just remember to maintain your distinguished shine.

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Publication

Event card



Play **Publication** beneath a *Species card*.

Double the points given at the end of the game by the *Species card* on top of **Publication**.

Because of the scientific significance of this species, you submitted a paper to a high impact journal, and they accepted it! However, not without ten revisions and fourteen corrections.

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Fundings

Event card



You may only play **Fundings** if you have at least 5 *Species cards* facing you.

Discard an *Event card* in game.

Don‘t know how to solve a problem? Money can often pave the way to solutions. However, no one will part with their money unless you prove your value. So, keep striving!

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PhyloGenome Extinction Edition · PhyloGenome Extinction Edition ·


PhyloGenome Extinction Edition · PhyloGenome Extinction Edition ·

PhyloGenome | Escape the Lab: The Case of the Lost Genome

A mysterious genome has surfaced in the genomic archives, but no one knows which species it belongs to. This genome is unlike any you've seen before, fragmented and hidden throughout the lab. Your mission? Solve a series of scientific challenges, apply advanced genomic techniques, and work as a team to reconstruct the lost genome before time runs out.

Each clue you uncover will bring you closer to its identity. You'll need to use lab resources and available scientific services, but beware: the path is filled with obstacles and technical complications. Some clues may mislead you, and only the sharpest minds will avoid pitfalls like sample contamination or power outages.

Your goal is to fully reconstruct the genome, identify the species, and solve the mystery. Do you have the skill and speed to escape the lab and uncover the identity of the lost genome?

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How to play?

Navigate to the GAME MAP

1. Create four piles with the cards based on their background color, and **only turn them over when instructed to do so**.

2. Unlock and complete the challenges along the game map's displayed path.

3. There are two icons (heart and clock) in the top left corner—**only unlock them if instructed to do so**.

4. Each team starts with **10 lives**, but be cautious: you will lose lives every time you fail to score all points in an exercise.

5. You have **2 hours and 30 minutes** to complete the game map.

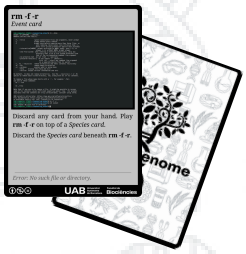
Good luck!

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Species cards [x67]



Event cards [x35]



Generation progress cards [x6]

Game dynamics

PhyloGenome

10+ | 2 | 30'



Credits: Phylogame.org, Honorah O'Neill

Nature Challenge

6+ | 2+ | 30'



Credits: Bioviva.com

Timeline

8+ | 1+ | 30'



Credits: Zygomatic-Games.com

PHYLOGENOME GAME: PhyloGenome explores the fascinating world of genome sequencing, allowing you to decide how the history of the sequencing era will unfold. It combines scientific concepts with strategic game play, where you will take turns playing sequencing projects from a vast array of potential species. The goal is to accumulate the most points by the end of the game.

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