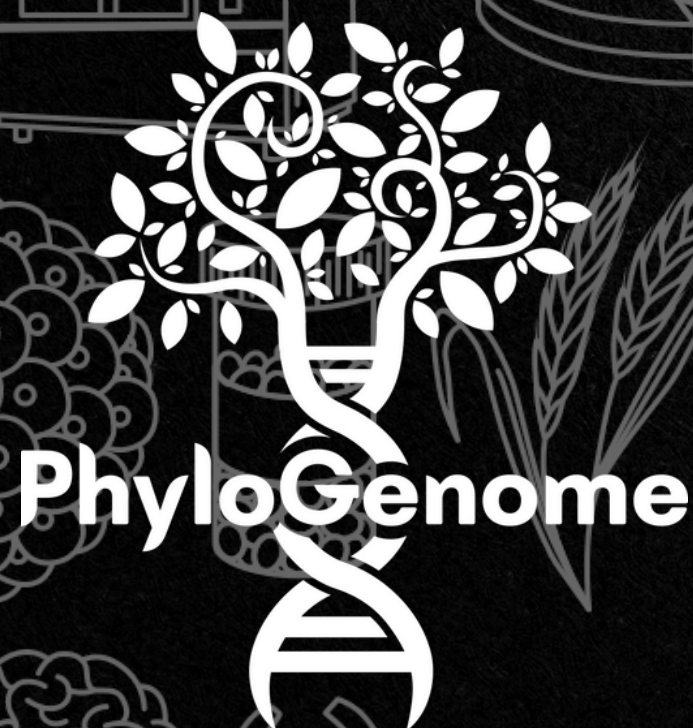


Setmana de l'Educació Oberta 2024

DE L'AULA A LA TAULA DE JOC: CONSTRUINT CONEIXEMENT COMPARTIT A TRAVÉS DEL PROJECTE **PHYLOGENOME**

Sònia Casillas

Departament de Genètica i Microbiologia &
Institut de Biotecnologia i Biomedicina,
Facultat de Biociències, UAB



ESTRUCTURA DE LA PONÈNCIA

CONTEXT

01

PhyloGenome com a projecte d'innovació docent

04

IMPACTE

Impacte en l'aprenentatge de l'alumnat i en la societat

OBJECTIUS PEDAGÒGICS

02

Objectius pedagògics en l'aprenentatge de l'alumnat

05

DIFUSIÓ

Difusió dels recursos a comunitats educatives i a la societat

RECURSOS

03

Recursos educatius, llicència CC i proveïment participatiu

06

EQUIP

Equip participant i agraïments



**ESTRUCTURA DEL
GENOMA**

**SEQÜENCIACIÓ &
ASSEMBLATGE**

**ANOTACIÓ &
EXPRESSIÓ GENICA**

**GENÒMICA
COMPARADA**

**CON
TIN
GUTS**

CONTEXT

Assignatura **Genòmica, Proteòmica i
Interactòmica**, diferents graus **Biociències**

Projecte **Genoma**:

10 CURSOS ACADÈMICS

18 GRUPS-CLASSE

352 GRUPS DE TREBALL

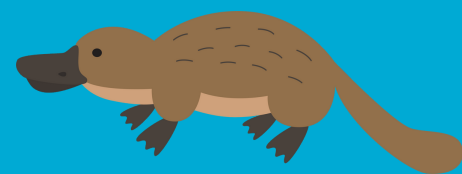
133 ESPÈCIES

PhyloGenome

UAB   

CONTEXT

TOP
5



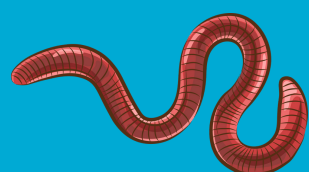
28X



14X



13X



13X



12X

Assignatura **Genòmica, Proteòmica i Interactòmica**, diferents graus **Biociències**

Projecte **Genoma**:

10 CURSOS ACADÈMICS

18 GRUPS-CLASSE

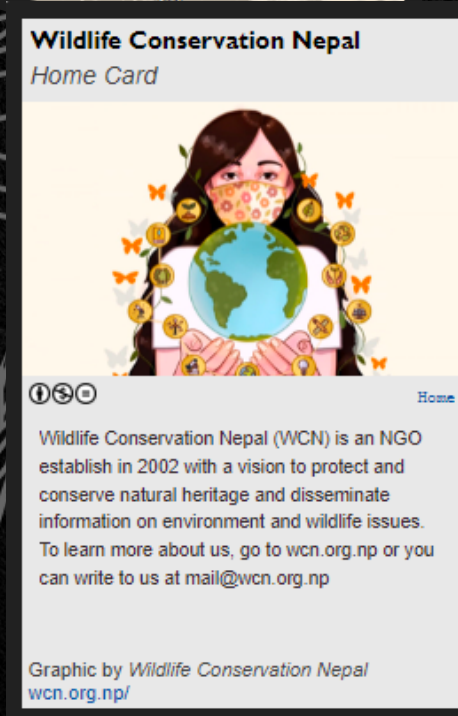
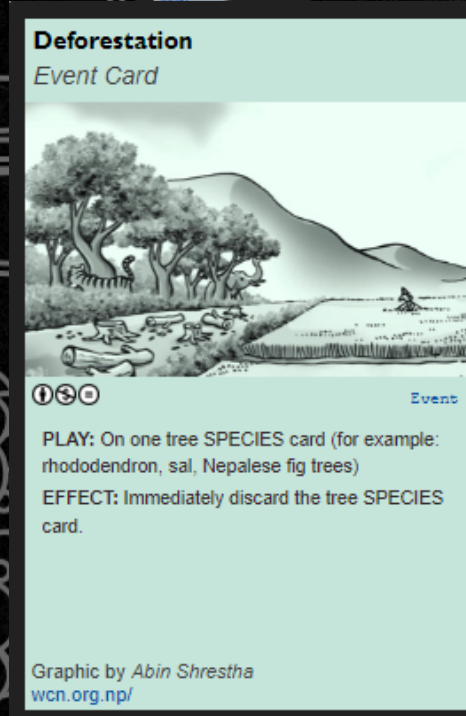
352 GRUPS DE TREBALL

133 ESPÈCIES

CONTEXT



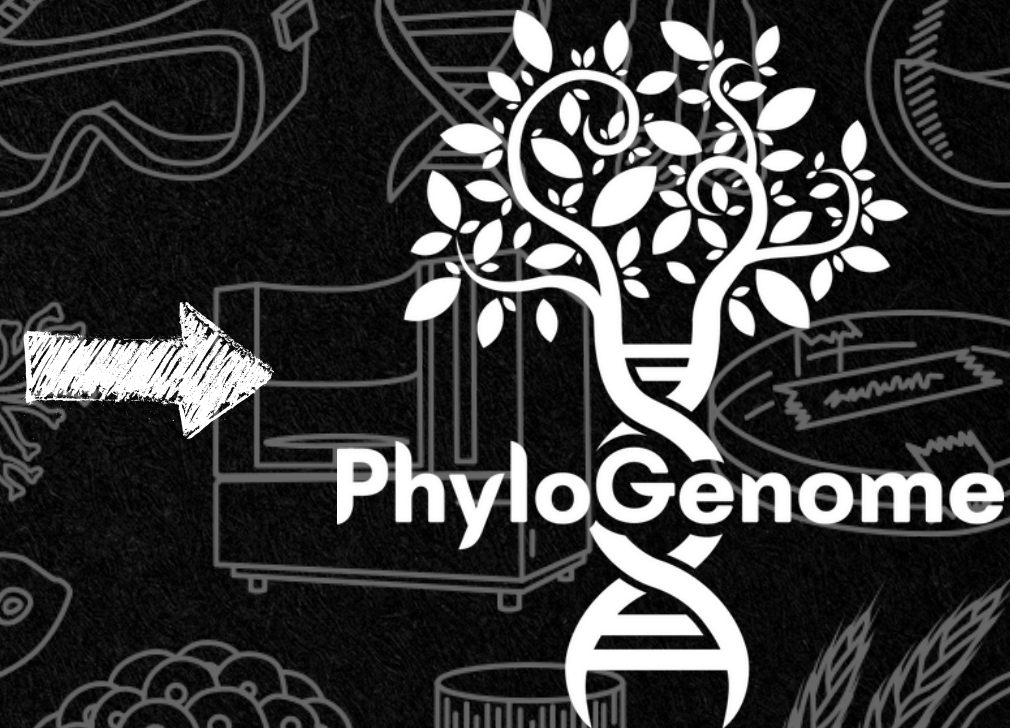
**SPECIES
CARDS**



**EVENT &
HOME
CARDS**

Credits: Phylogame.org,
Honorah O'Neill

**DINÀMICA DE JOC INSPIRADA EN LA
CIÈNCIA EN SEQÜENCIACIÓ GENÒMICA**



PhyloGenome explora
el fascinant món de la
seqüenciació
genòmica, permetent-
te decidir com es
desenvoluparà la
història de l'era de la
seqüenciació.

OBJECTIUS PEDAGÒGICS

- 1 Aprenentatge Actiu Learning By Doing
- 2 Integració de Coneixements
- 3 Desenvolupament de Comprensió Conceptual
- 4 Col·laboració i Treball en Equip
- 5 Habilitats de Comunicació

RECURSOS

**MATERIAL DOCENT
TEMES + TARGETES
(CA/ES/EN)**

**DINÀMICA DE JOC
GAME RULES
(CA/ES/EN)**

**DISSENYS LOGO,
TARGETES, CAIXA...
(EN)**

**PÀGINA WEB
PHYLOGENOME.
OMICSUAB.ORG**

MATERIAL DOCENT

1

Comencem! Sobre un genoma seqüenciat i publicat...

2

Seqüenciació i assemblatge

3

Anotació de gens i anàlisi de l'expressió gènica

4

Evolució del genoma: genòmica comparada

5

Per acabar: Creació de la targeta d'espècie



RECURSOS

MATERIAL DOCENT
TEMES + TARGETES
(CA/ES/EN)

DINÀMICA DE JOC
GAME RULES
(CA/ES/EN)

DISSENYS LOGO,
TARGETES, CAIXA...
(EN)

PÀGINA WEB
PHYLOGENOME.
OMICSUAB.ORG

GAME RULES

BOX

EVENT CARDS

23 cards

What is Phylogenome?
PhyloGenome explores the fascinating world of genome sequencing, allowing you to decide how the history of the sequencing era will unfold. This game combines scientific concepts with strategic gameplay, 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.

Types of cards
Species cards are the constructing blocks of the game and the source of the points. These cards provide information about the species and its first genome sequencing project. They also provide details regarding how they are played. Discarded species cards go to the discard pile of the player the card was facing.

Genome scale
Card points
Sequencing information
Genomic interest
Movement

Compatibility
In-game cards in PhyloGenome must be compatible with the cards adjacent to them. When playing a species card, adhere to the following requirements:
Genome scale compatibility: The genome scale of the played card and all adjacent cards must share the same number or have a difference of one.
Sequencing generation limits: You may only play cards up to your current sequencing generation technology.
Actions may lead to incompatible connections or empty spaces, resulting in a section of the cards becoming disconnected from the generation progress cards. In such cases, each player has until the end of their next turn to fix it. If they don't, all "disconnected" or incompatible cards are discarded.

Preparation:
Pick a random card: the player whose birthday is closest to its publication date, starts. Then prepare the game:
1. Each player sits facing each other with their deck of cards facing down next to them. The recommended composition is 25 species cards and 10 event cards of your choice for each player.
2. Each player places a generation progress card of the first generation on the table facing them side by side.
3. Each player draws 5 cards from their respective deck.
Player turn
Each turn is divided into four steps:
1. **Activate your start-of-turn actions:** Trigger any action specified to activate "At the start of your turn".

Event cards affect the game dynamics. They can either be played:
- **Beneath a species card,** affecting until either one is discarded. If the species card moves, the event card also moves.
- **On top of a species card,** affecting momentarily and then being discarded.
- **On the table,** having a constant effect until it is discarded.
- **By influencing the game manually** and then being discarded.
Detailed playing rules for each event card can be found at the games web page: phylogenome-omicsuab.org.
Discarded event cards go to the discard pile of the player who played the card; thus, always place them facing yourself.
Generation progress cards track the technological advancements. The players start with a sequencing machine that is updated as the game progresses.

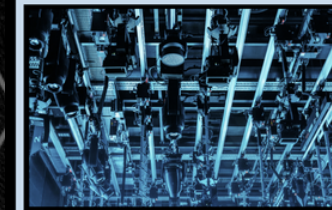
Counting points
The game ends when both players have played all their species cards. To finish, count the points as follows:
- **Species card points:** Sum the points of every species card facing you. Apply the effects of any event card beneath them.

2. Draw a card: Draw a card from your deck and put it into your hand.
3. Action: Perform up to three of the following actions; you may repeat any except for playing an event card.
- **Discard a card:** Discard a card.
- **Play a species card facing you:** Move up to 2 species cards.
- **Play an event card.**
4. End of turn: The turn ends, and cards in incompatible spots or disconnected from the generation progress cards are discarded.

2. Sequencing generation points: Count the number of species cards using each sequencing generation; then multiply each total by 1, 2, and 3 respectively.
3. Special prohibits: For the player with the longest chain of species cards, with ordered publication dates (chain must be longer than 5): 15 points.
- the most variety of genomic interest areas among species cards: 8 points.
- the oldest publication date; the largest genome size; the "highest number" of protein-coding genes; the highest number of unique chromosomes: 2 points each.

Detailed game rules and alternative game dynamics are available at phylogenome-omicsuab.org.
Credits: PhyloGenome.org, Hannah O'Neill.
Funded by: Universitat Autònoma de Barcelona.
UAB Universitat Autònoma de Barcelona

Technological advancement
Event card



Place **Technological advancement** on the table until it is discarded.
Advance to the next sequencing generation you currently are.

Ride the wave of innovation for a leap into a brighter tomorrow. This is not just a card; it's a ticket to the future. Embrace the unknown, as right now, more than luck – you need an edge.

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Scientific collaboration
Event card



Choose a **Species card** from your hand.
Your opponent shuffles all the **Species cards** in their hand. You then choose a random card, put it into your hand, and give the selected card from your hand to your opponent.

The real treasure is the friends we made along the way

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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, everyone will follow you unconditionally. If you don't agree with something, they won't as well! Just remember to keep it shiny.

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SPECIES CARDS

133 cards

Garden pea
Pisum sativum



The Garden pea has a jump of 2.
First publication date: Jul 19, 2022
Genome size: 3,800 Mb
Coding genes: 40,025
Unique chromosomes: 7

Viridiplantae, Streptophyta, Magnoliopsida

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Pineapple
Ananas comosus



The Pineapple has a move of 2.
First publication date: Nov 2, 2015
Genome size: 381.9 Mb
Coding genes: 22,251
Unique chromosomes: 25

Viridiplantae, Streptophyta, Magnoliopsida

UAB Universitat Autònoma de Barcelona

Green sea turtle
Chelonia mydas



The Green sea turtle has a move of 1.
First publication date: Jul 15, 2021
Genome size: 2,100 Mb
Coding genes: 19,752
Unique chromosomes: 28

Metazoa, Chordata, Testudines

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PhyloGenome

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PÀGINA WEB

- Descarregar materials CC
- Proveïment participatiu

IMPACTE

- 1 Impacte sobre l'aprenentatge de l'alumnat
- 2 Inclusivitat i Diversitat
- 3 Impacte en la Consciència Ambiental
- 4 Accés a l'Educació Oberta
- 5 Foment de la Ciència Participativa
- 6 Desenvolupament de la Comunitat Científica

DIFUSIÓ



phylogenome.
omicsuab.org



phylogenome

Crèdits:

- Phylogame.org, Honorah O'Neill

Agraïments:

- Multi-omics Bioinformatics Core Facility
- Servei de Genòmica

1

Pàgina web

phylogenome.omicsuab.org

2

Instagram [@phylogenome](https://www.instagram.com/phylogenome)

3

Difusió a la comunitat científica
(congrés SMBE, evoldir...)

4

Comercialització del joc i de les
actualitzacions anuals a través de
makeplayingcards.com

PhyloGenome

UAB   

EQUIP



phylogenome.
omicsuab.org



phylogenome

Crèdits:

- Phylogame.org, Honorah O'Neill

Agraïments:

- Multi-omics Bioinformatics Core Facility
- Servei de Genòmica



Sònia Casillas

IDEA ORIGINAL &
MATERIAL DOCENT



Noah Jornet-
Calomarde

DISSENYS &
DINÀMIQUES I
ELEMENTS DEL
JOC

Alumnat de
l'assigna-
tura GPI

CARTES
D'ESPÈCIE

PhyloGenome

UAB





PhyloGenome