The protein families game: a learning tool for the non scientific community

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Typhaine Paysan-Lafosse

Senior bioinformatician

typhaine@ebi.ac.uk

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Project idea

- Always fascinated by science and biology
- Wanted to develop a public engagement activity
- Love of board games
- Played the game “Jeu des 7 familles” as a child (equivalent to “GO fish” or “Happy families”)
- Work for the InterPro database: classify proteins into groups according to sequence or structural similarity
- Games are a good way to introduce people to science

Protein classification

Protein family = group of proteins that share a common evolutionary origin

Proteins are grouped because they have:

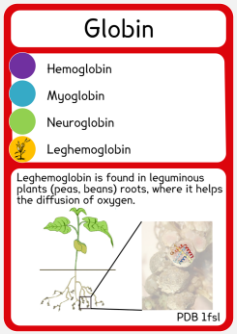
- Related functions
- Similarities in their amino acid sequence or structure

Multiple groups of scientists work on protein classification and use different methods to generate their categorisation

InterPro (www.ebi.ac.uk/interpro)

Combines predictive models from several member databases

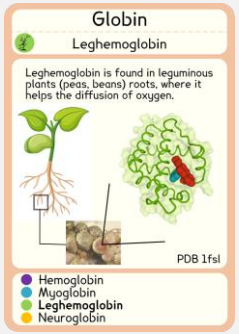
Game development



V1

7 families of 4 protein cards

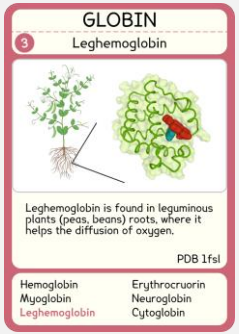
Lexi readable font for people with Dyslexia



V2

Off-white background colour for people with Dyslexia

Changed card layout following survey

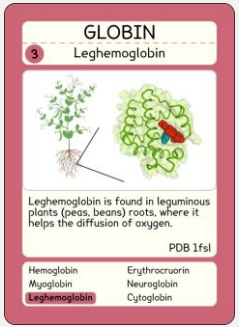


V3

Addition of 2 protein cards per family

Cards colours changed to be colourbling friendly

Design refining following survey



V4

Added contrast to the text areas after play-test

Adjustment of bleeding area for printing

Addition of family questions cards

About the game

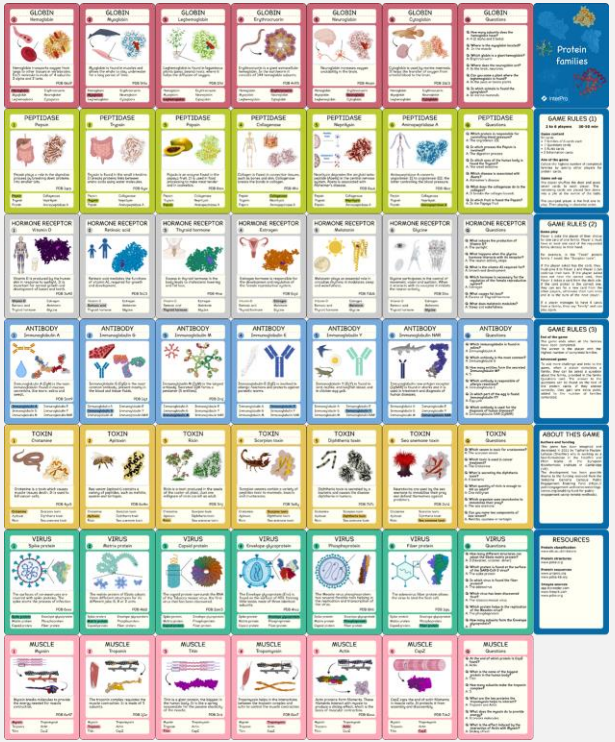
2-6

10+

30-50 min

Game content

- 7 families of 6 protein cards
- 7 family question cards
- 5 rules cards



Aim of the game

Collect the highest number of completed families by asking other players for protein cards.

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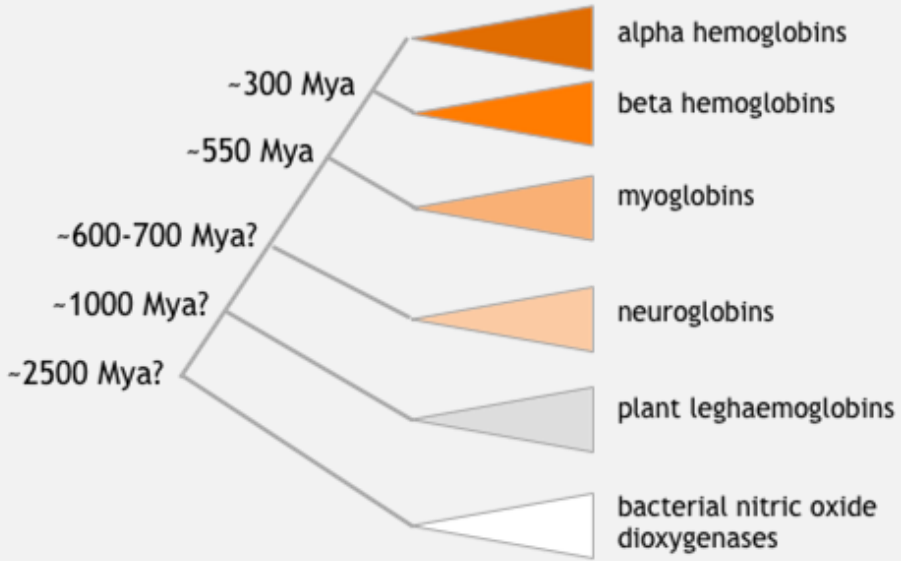
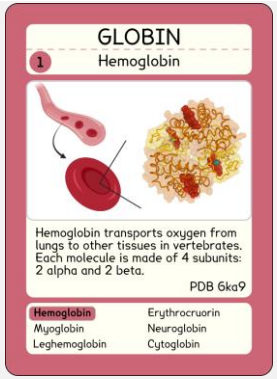
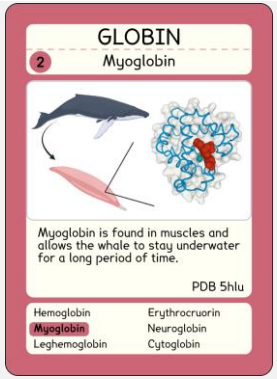
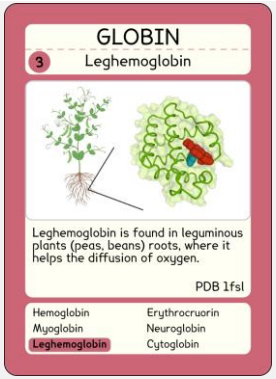
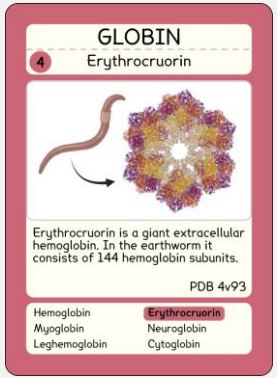
Globin family

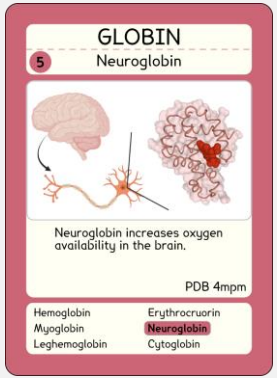


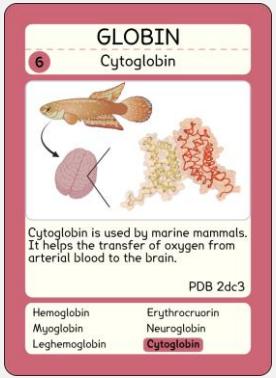












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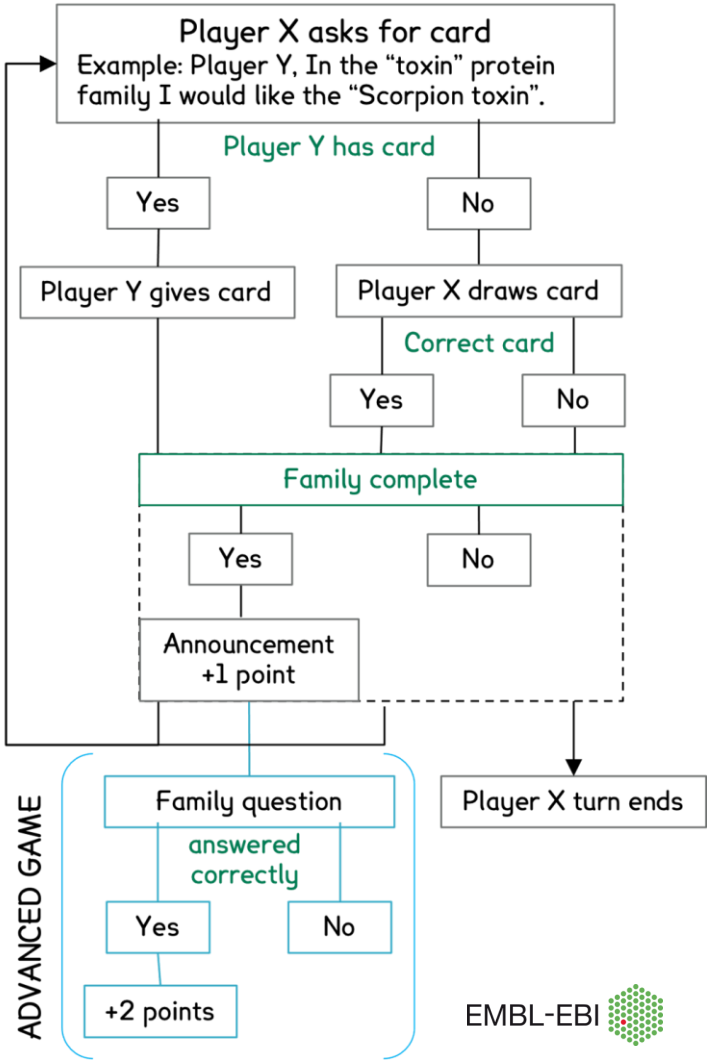
Game logic

Game logic is similar to the *Happy families* or *Go fish* games: players need to complete the maximum number of protein families.

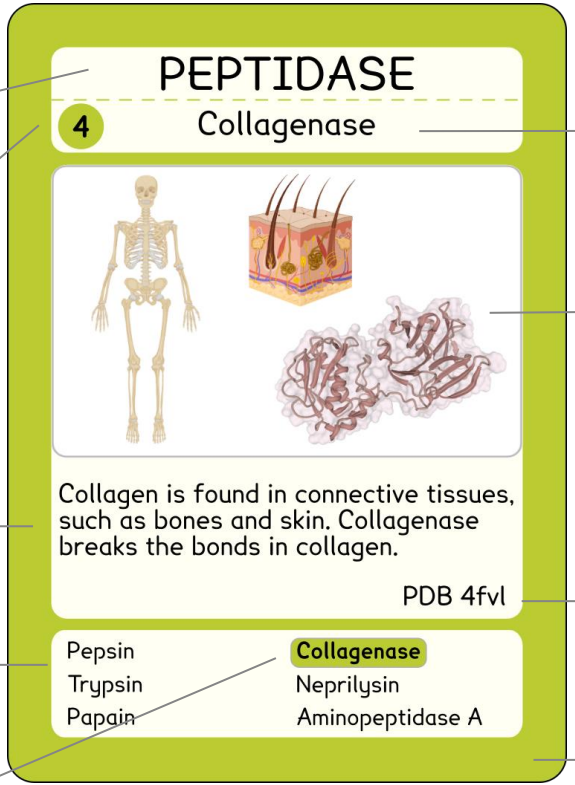
Completed family = 1 point

Different playing modes:

- Easy: use families colours and cards numbers
- Medium: use families and proteins names
- Advanced: same logic as the medium mode, but players can get 2 additional points if they answer correctly to a “family question”



Card content



Protein family name
Explore in www.ebi.ac.uk/interpro

Protein card number in the family

Fun fact about the protein

Members of the protein family to collect

The current protein in the family is highlighted with a coloured background

Protein name

Protein structure

PDB structure identifier
Explore in www.pdbe.org

Different background colour for each family

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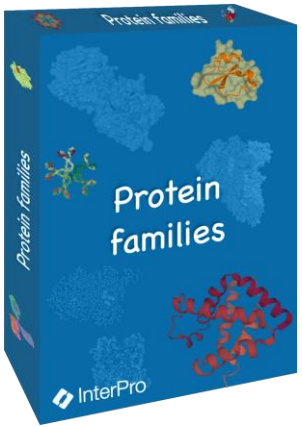
Where can I find the game?

Printed copy: typhaine@ebi.ac.uk

Online: https://tabletopia.com/games/protein-families

Trailer



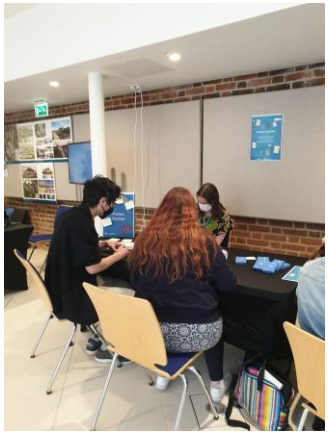
Game highlights

- Main objective: have *fun* whilst *learning* new things about proteins
- Target audience: *16-18* years old
- Introduce concept of proteins and protein families
- Thoughtful design for audiences with *dyslexia* and *color blindness*
- Online version suitable for people in the *neurodiverse* spectrum
- *Strategy* game

EMBL-EBI summer fair 2022

First official presentation to the public

Enthusiasts comments: “Fun way to learn”, “Educational”, “Strategic”, “Fun”, “Addicting”



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Future developments

Go to schools to present the game to teachers and students

Develop an educational page in the InterPro website:

- List of resources introducing the concept of protein classification
- Link to play the online game
- Contact form

Translate the game in different languages

Acknowledgement:

Wellcome Trust enabling fund
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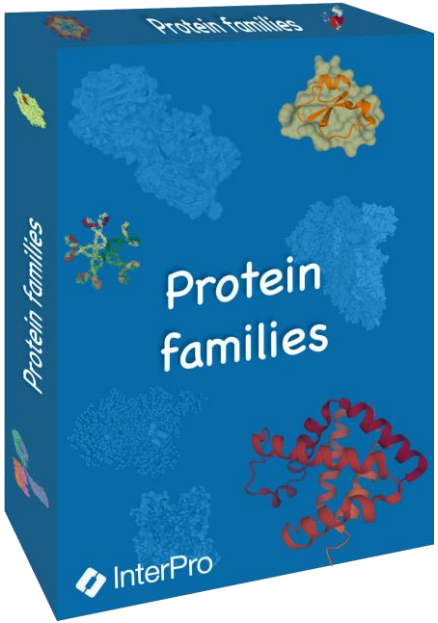
Thank you!



Contact: typhaine@ebi.ac.uk

Follow us on Twitter: @InterProDB @typhainePL

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