


# 'Project Discovery': How Citizen Science Got into 'EVE Online'

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Senior Creative Producer at CCP

**Attila Szantner**

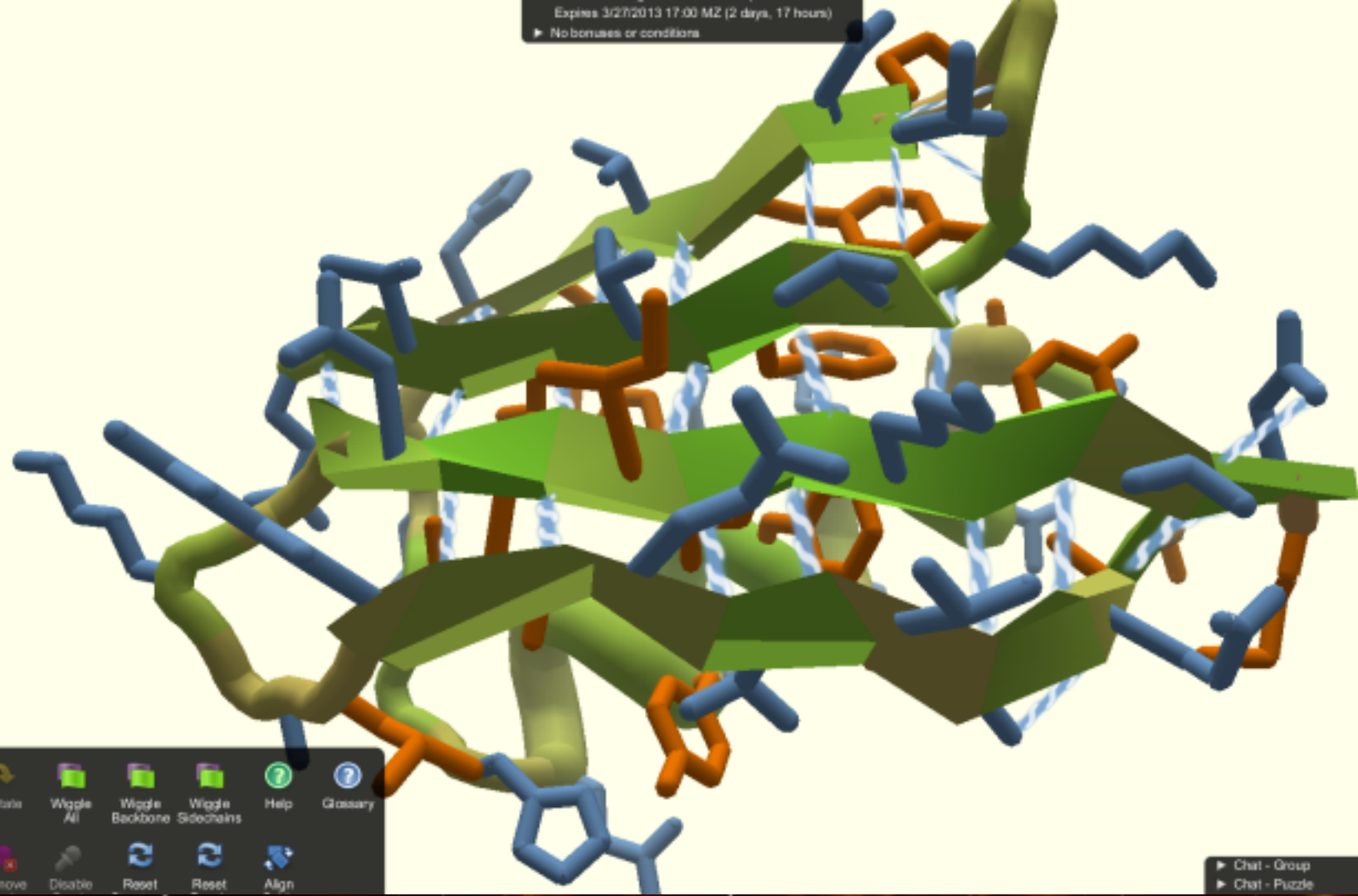
CEO of Massively Multiplayer Online Science




# CITIZEN SCIENCE



► No bonuses or conditions



Freeze Remove Disable Reset Reset Align

- ▶ Chart - Group  ✕ auto show
- ▶ Chart - Puzzle  ✕ auto show



CLASSIFY

STORY

SCIENCE

GALAXY ZOO

DISCUSS

PROFILE

LANGUAGE



Classify



DECaLS



Invert

Examples

Restart

*Note: Please always classify the galaxy in the centre of the image.*

SHAPE

Is the galaxy simply smooth and rounded, with no sign of a disk?



Smooth



Features or disk



Star or artifact



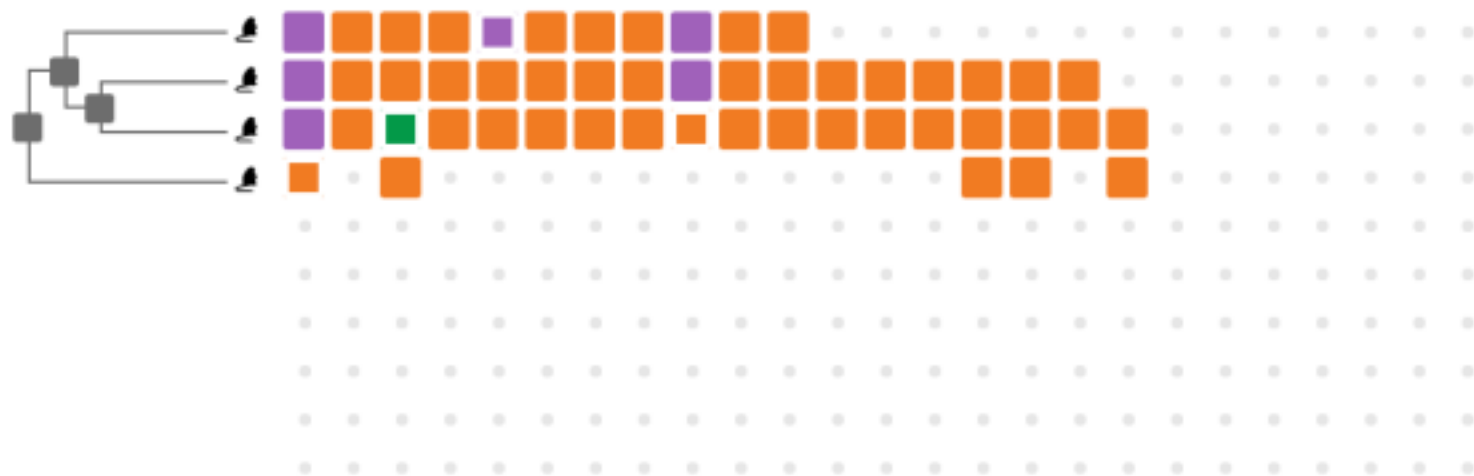


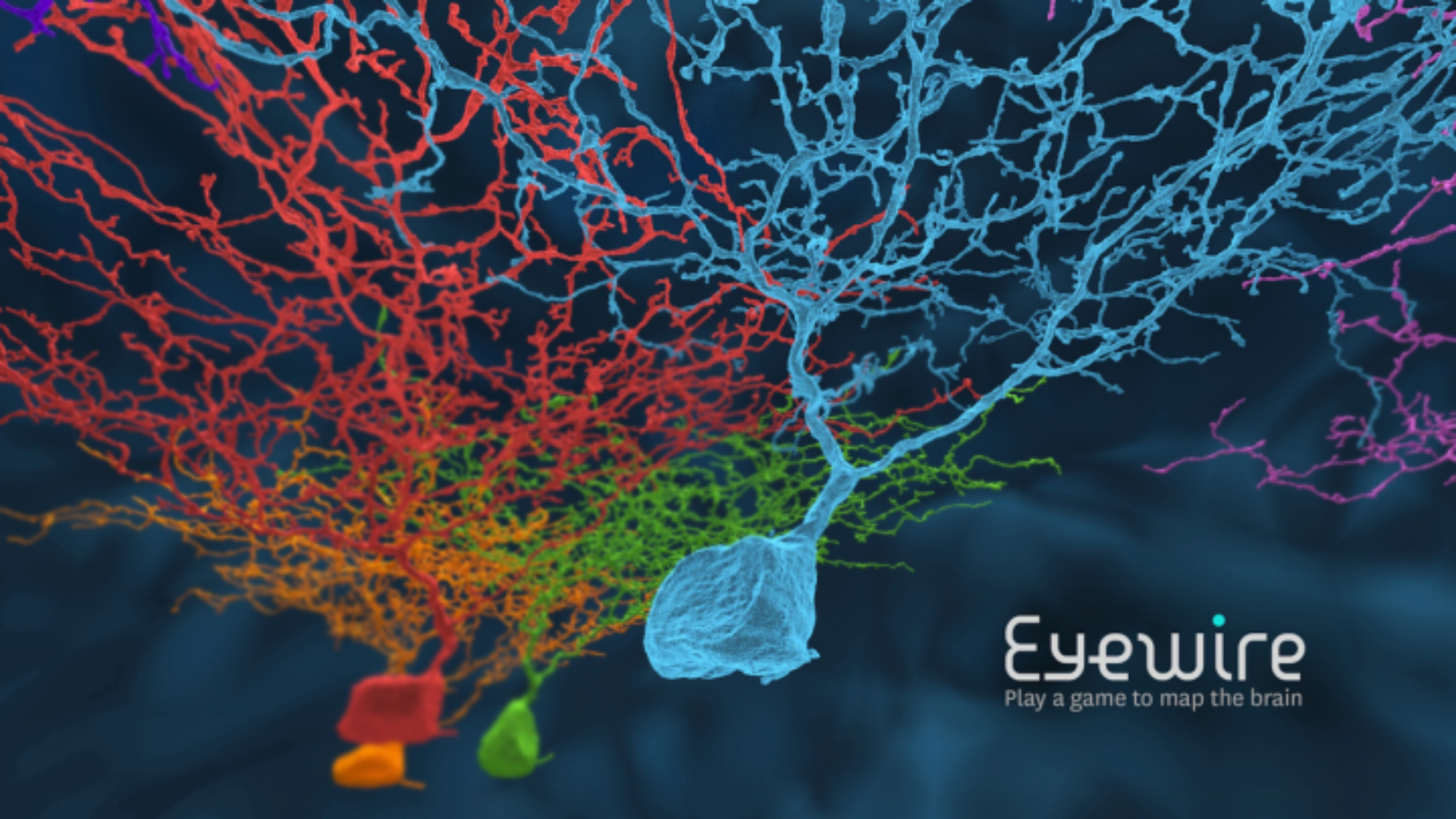
#154 | STAGE 3/3



Par **64** **47** **47** Best Score

matches 72 - mismatches 4 - gaps 3 - gap extends 9





Eyewire

Play a game to map the brain









The logo for EVE Online, featuring the word "EVE" in a stylized, white, blocky font. The letters are composed of horizontal bars, giving it a digital or mechanical appearance. The "V" is formed by two bars meeting at a point. The background is a dramatic space scene with a dark, star-filled sky on the left and a bright, fiery nebula on the right.

ONLINE

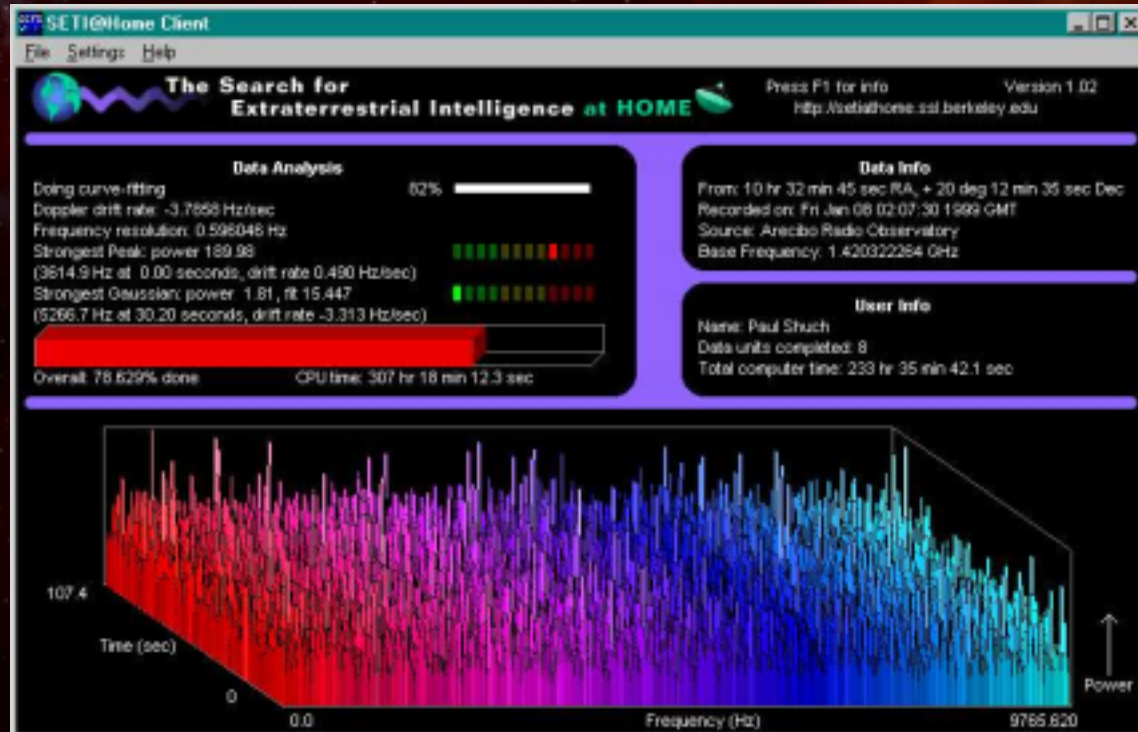
# Project Discovery + EVE Online ??

- Because science!





# Project Discovery + EVE Online ??



# Project Discovery + EVE Online ??

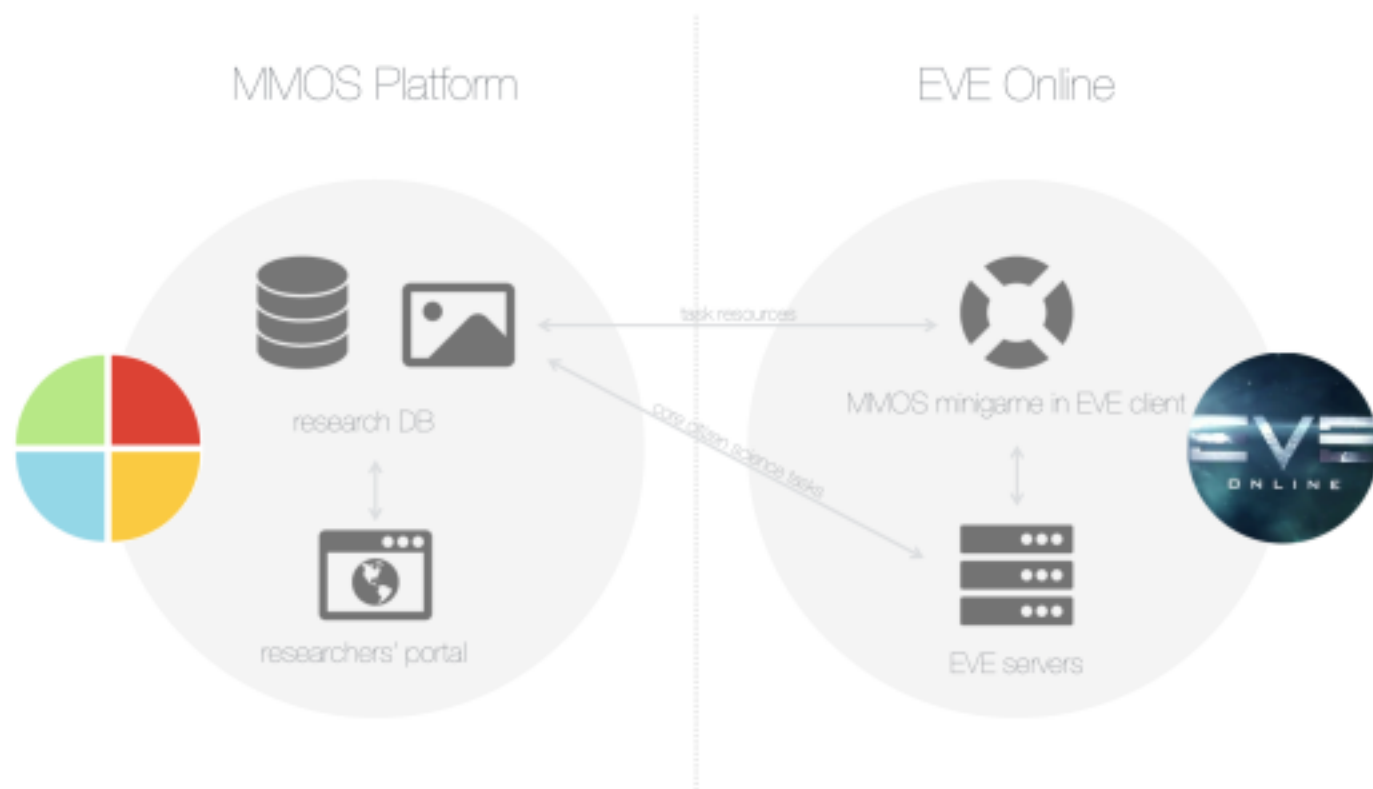
- Because science!
- Super interesting game design challenge

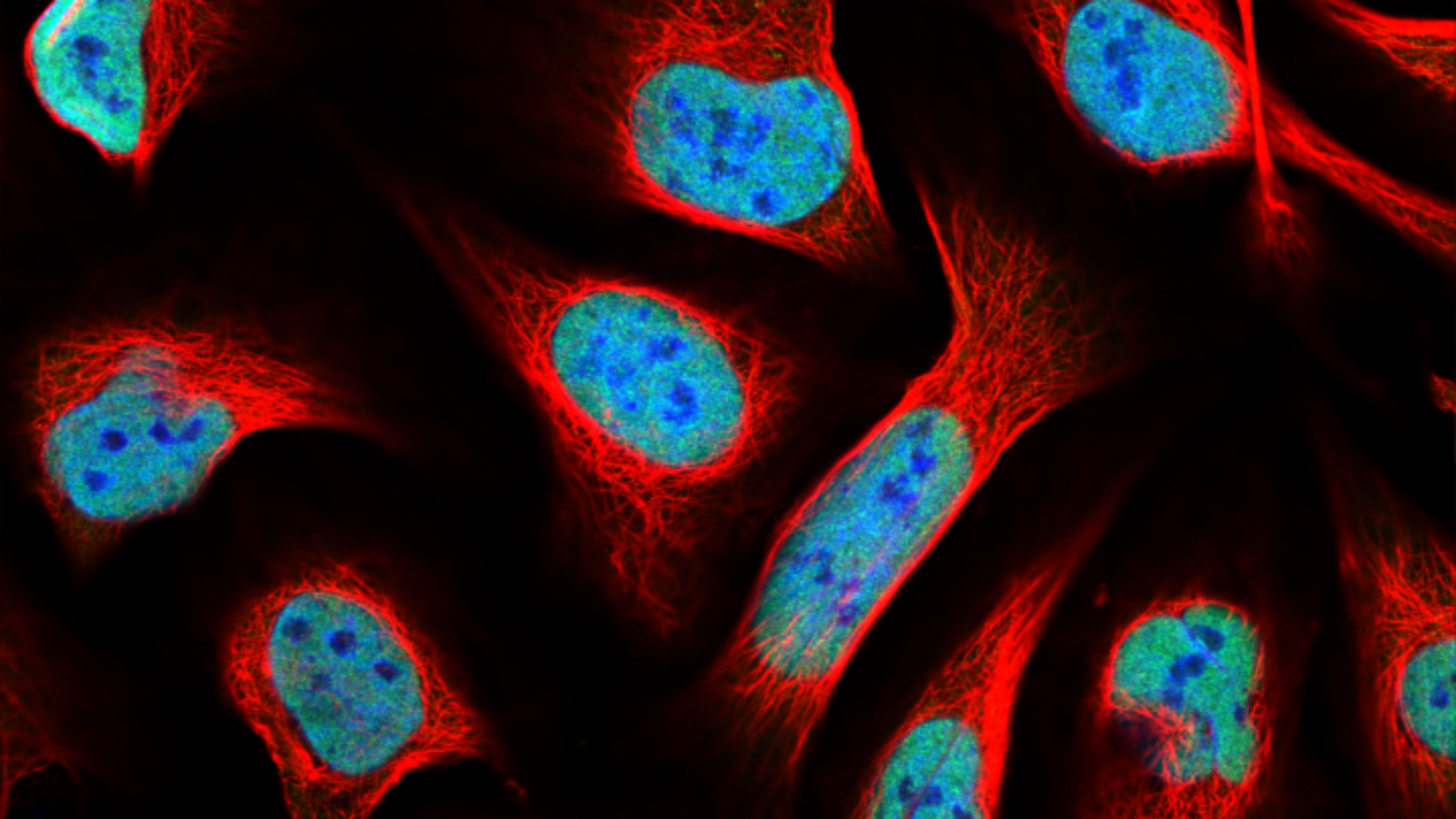
# Project Discovery + EVE Online ??

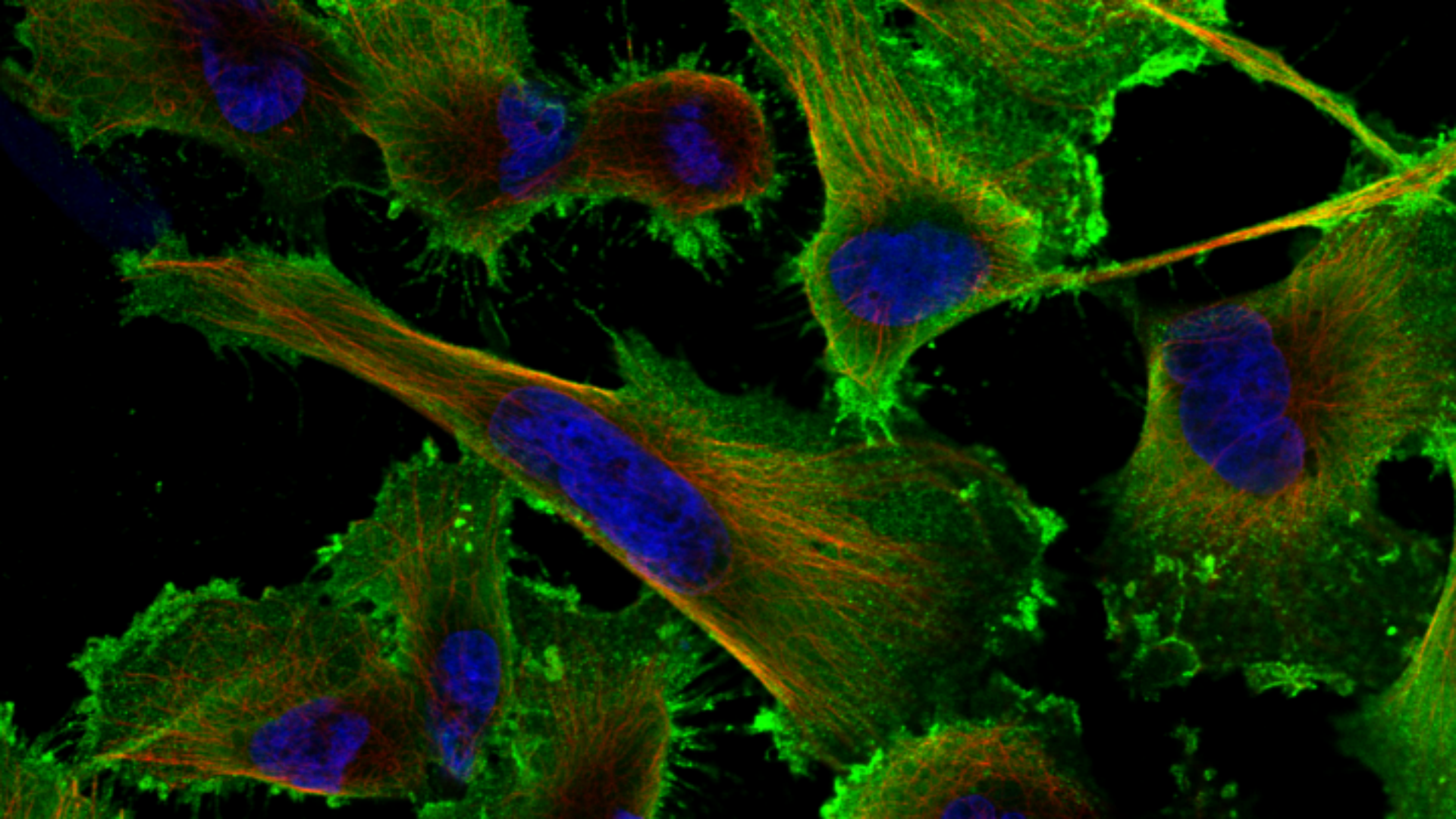
- Because science!
- Super interesting game design challenge
- We believe this is the first step in something much bigger



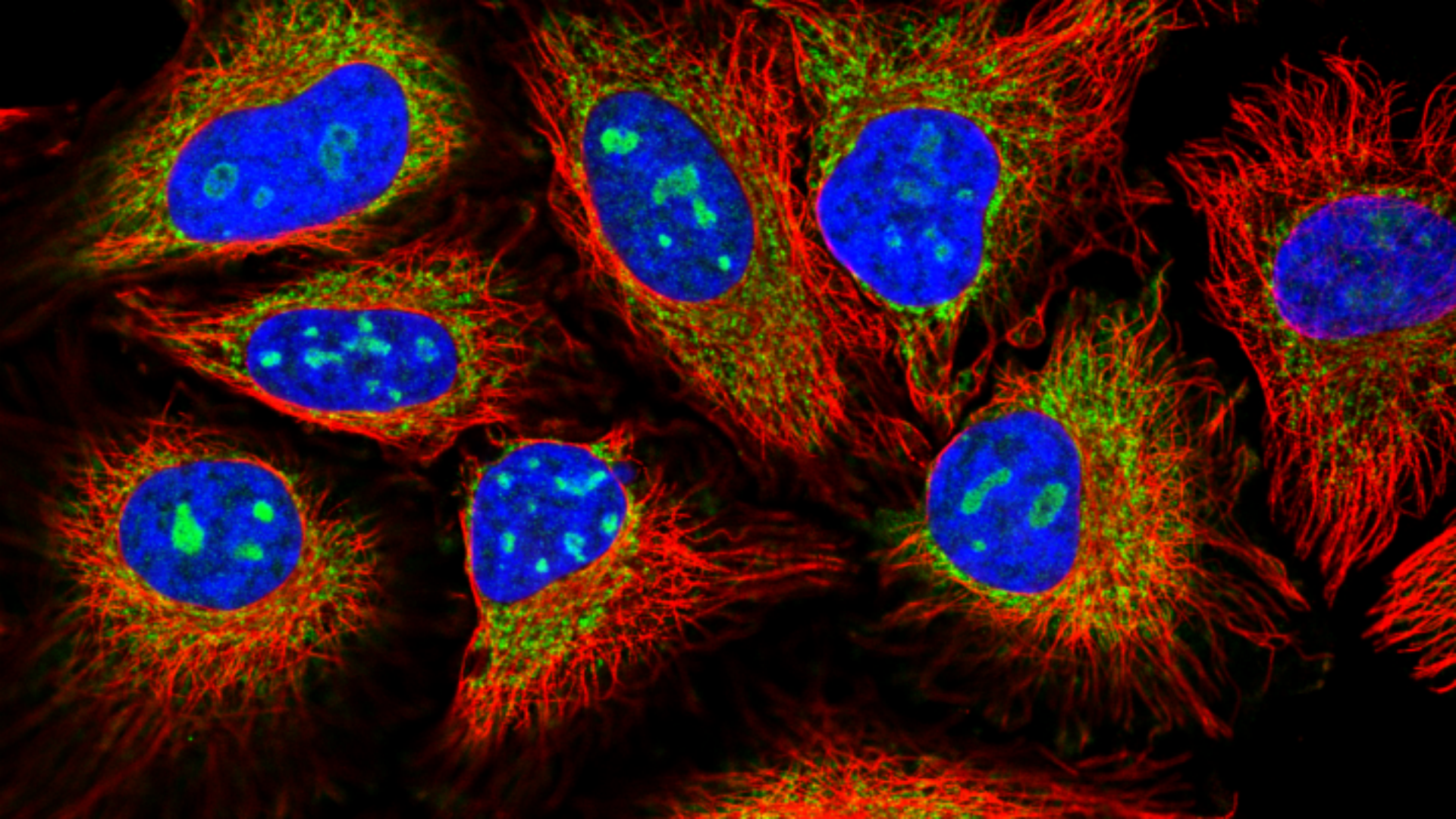
# HIGH-LEVEL ARCHITECTURE OVERVIEW











# Integrating science

The background of the slide is a deep space image. It features a large, glowing nebula with intricate, filamentary structures in shades of orange, red, and yellow. The nebula is set against a dark, almost black background filled with numerous small, distant stars. The overall composition is dramatic and evokes a sense of the vastness and complexity of the universe.

# Integrating science

- Real world purpose of altruistic nature



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- Aesthetically fitting and thematically adoptable to fit the EVE Universe

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- Real world purpose of altruistic nature
- Aesthetically fitting and thematically adoptable to fit the EVE Universe
- Task must take consistent length of time to solve
- The research needs to require a high volume of tasks



ASTRAHUS

CONSTRUCTING



## PROJECT DISCOVERY

Project Discovery is run by the Sisters of EVE (SoE). Their project lead, Professor Lundberg, will recruit you and provide a basic tutorial on identifying patterns of protein distribution in human cells. Upon completion you can analyze unique images fresh from the lab. For every task you solve, the SoE will reward you and increase your Project Discovery rank.


ASTRAHUS

CONSTRUCTING



## PROJECT DISCOVERY

Project Discovery is run by the Sisters of EVE (SoE). Their project lead, Professor Lundberg, will recruit you and provide a basic tutorial on identifying patterns of protein distribution in human cells. Upon completion you can analyze unique images fresh from the lab. For every task you solve, the SoE will reward you and increase your Project Discovery rank.



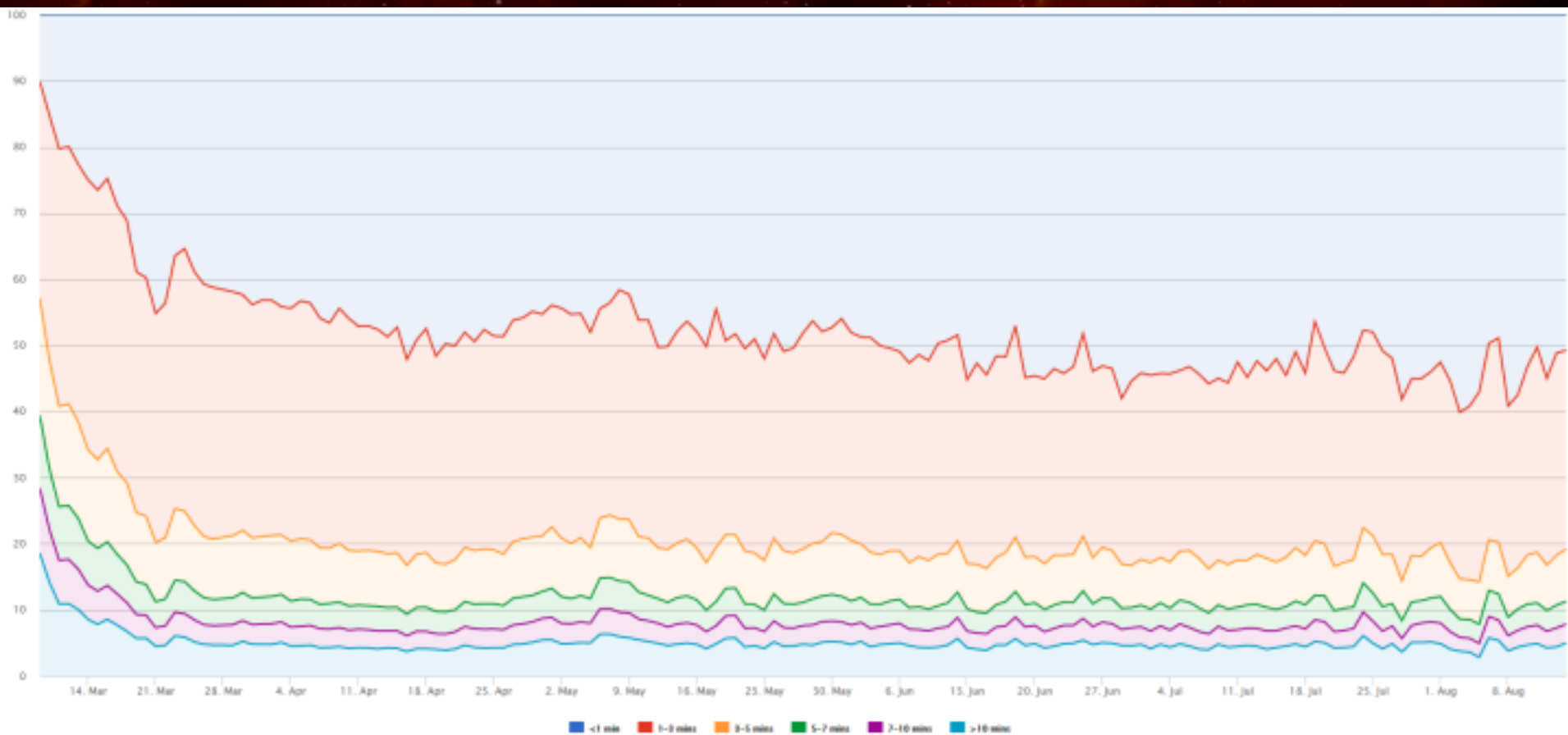
THE  
**SCOPE**  
TECHNOLOGY AND INNOVATION

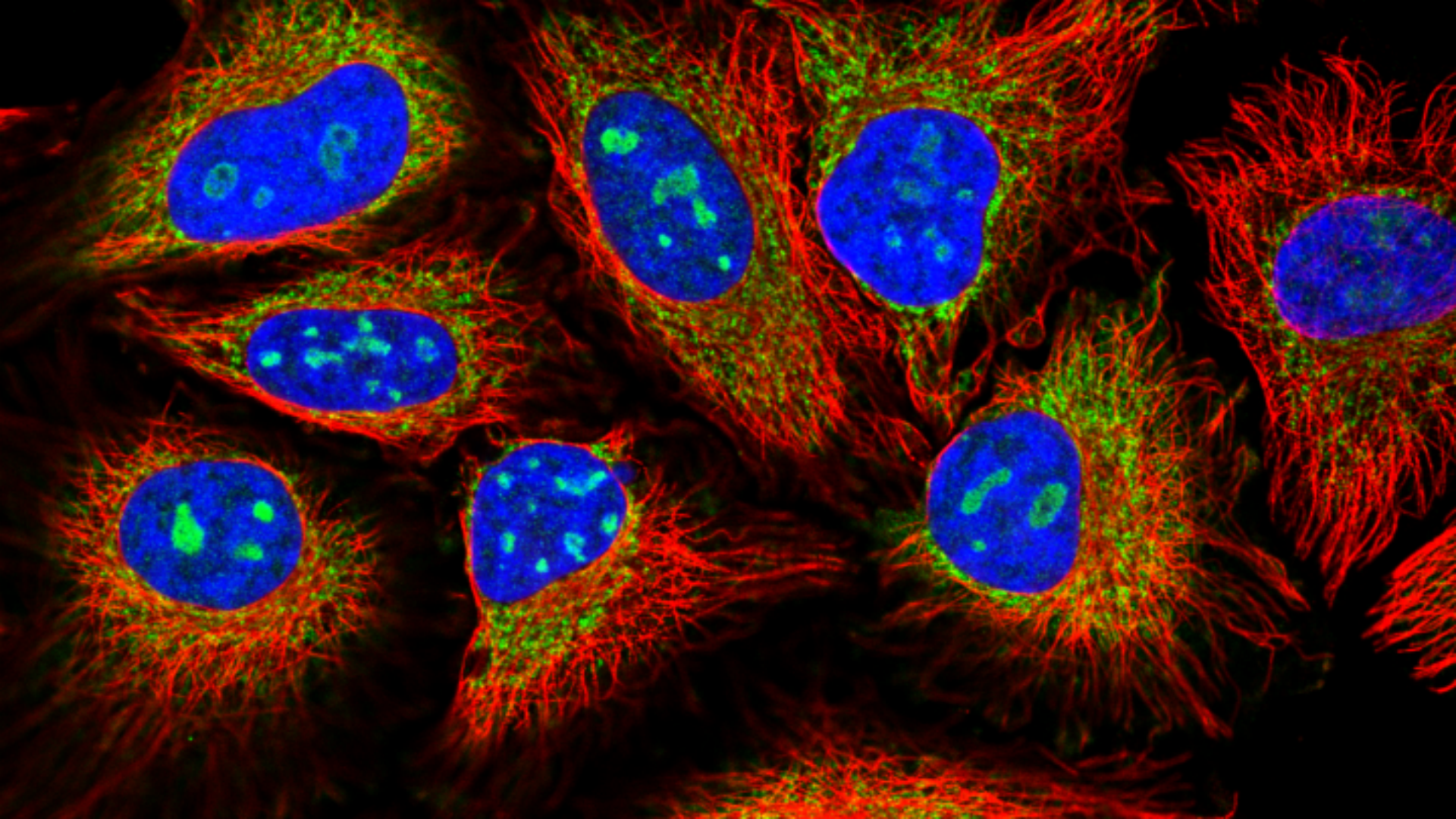
## DRIFTERS LEAVE AMARR SPACE

THE DARK SUN ALLIANCE CLAIM SOVEREIGNTY OVER FIVE SYSTEMS IN DETORID PUSHING OUT DREAM

YC 118.03.D9







EVE Citizen Science



Genetecist Level: IV

Data Points: 0

Rank up by correctly identifying subcellular samples of increasing complexity.



Analysis incomplete. Please submit a pattern match for scoring.

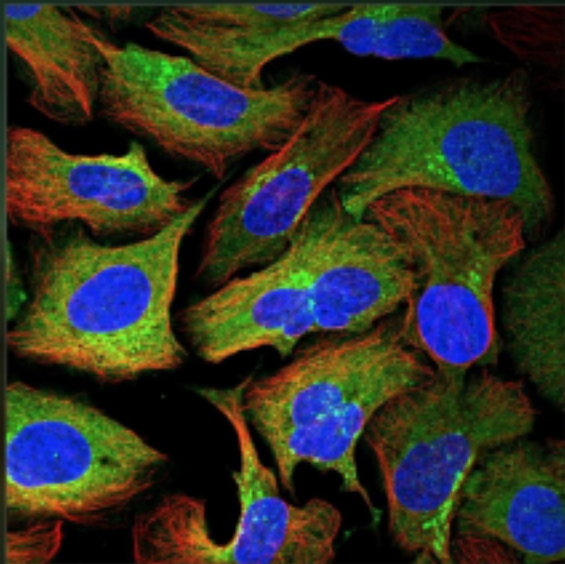
Subcellular Sample

Channel Filter

Red + Green + Blue

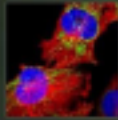
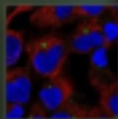
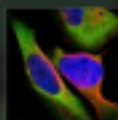


Select any of the characteristics below that match the sample on the left. You can use the channel filter to aid in identification.

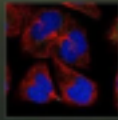
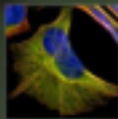
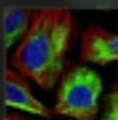


Cytoplasm

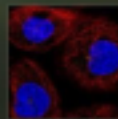
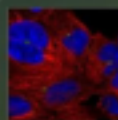
1



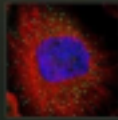
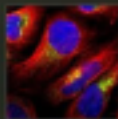
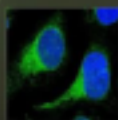
1



1



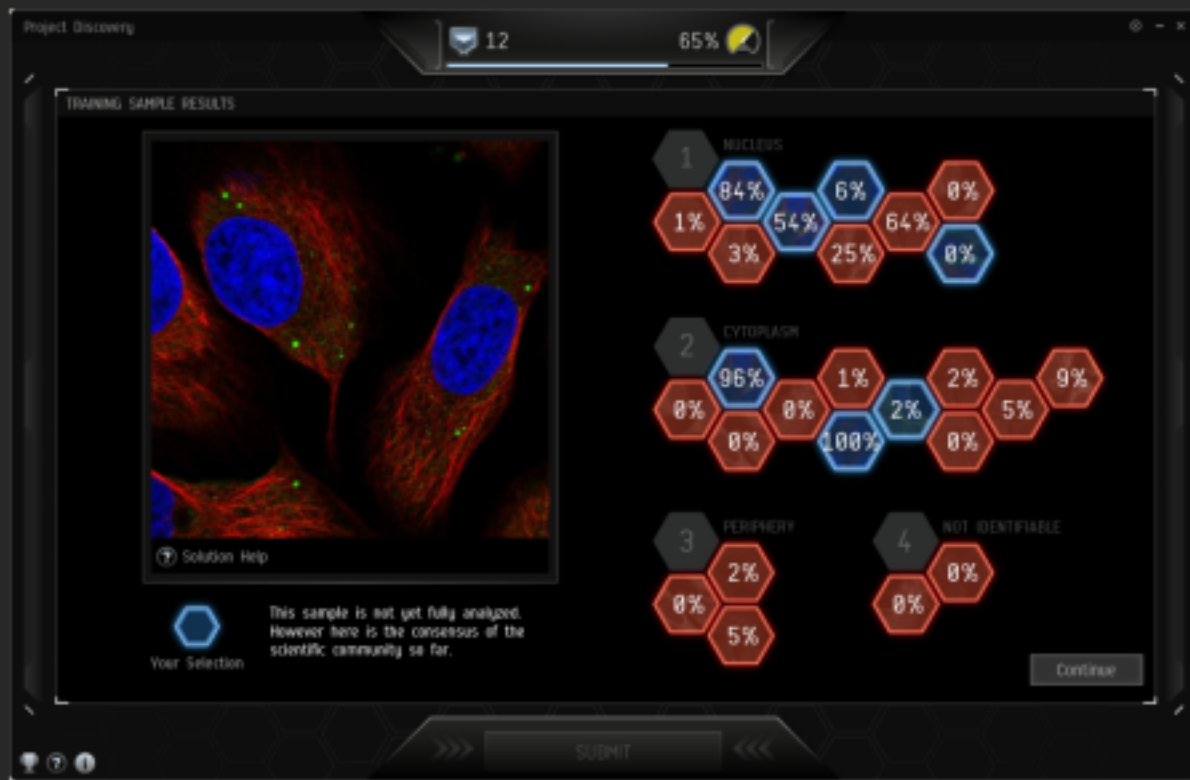
1



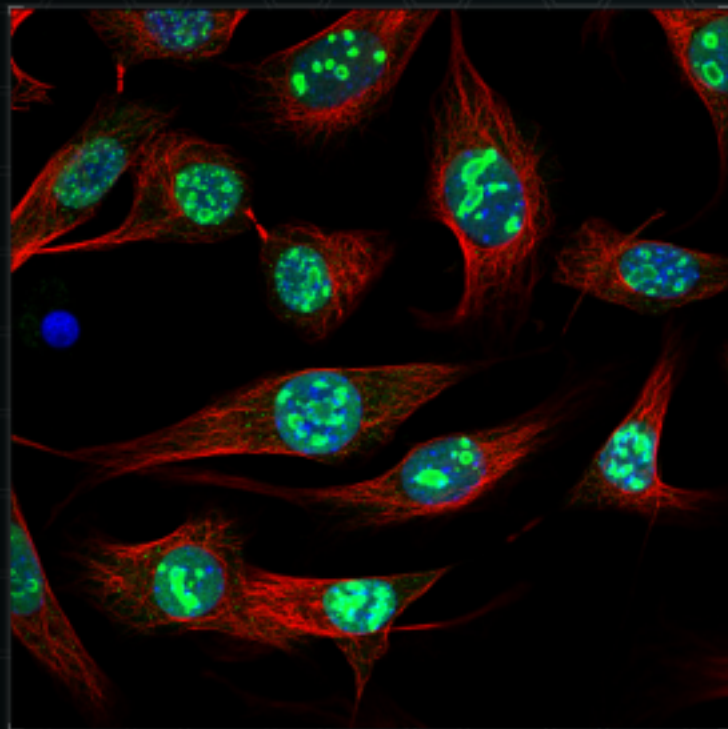
Previous

Next





## Foreign Cell Sample



Abnormal Sample



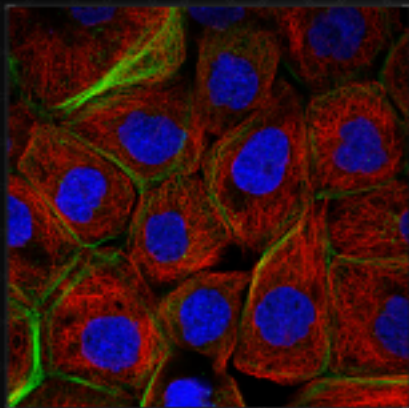
Submit

Project Discovery

27

83.3%

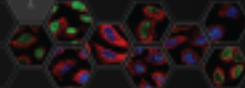
## Foreign Cell Sample



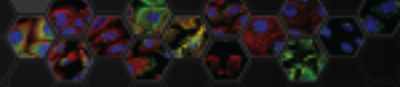
Micrograph Sample



1 NUCLEUS



2 CYTOPLASM



3 PERIPHERY



4 NOC



5 NOT IDENTIFIABLE



Submit





Project Discovery 27 83.3%

### Foreign Cell Sample



Abnormal Sample

1 NUCLEUS

2 CYTOSOL

3 PERIPHERY

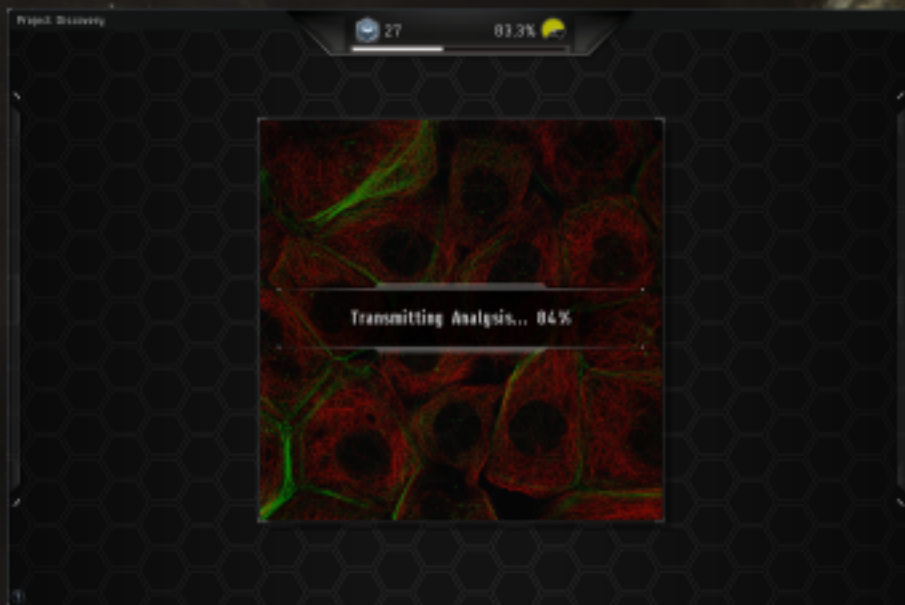
4 NUC

**Cytoskeleton (actin filaments)**  
Long, very straight and parallel filaments that outline the edges of the cell.

Examples

>>> Submit <<<

Detailed description: This is a screenshot of a game interface titled 'Project Discovery'. At the top, it shows a progress bar at 83.3% and a level indicator '27'. The main section is titled 'Foreign Cell Sample'. On the left is a large micrograph of a cell sample with red cytoplasm and green cytoskeleton. Below it is a label 'Abnormal Sample' and a color key for 'Nucleus' (blue), 'Cytosol' (green), and 'Periphery' (red). In the center is a hexagonal grid of smaller micrographs. The first three are labeled '1 NUCLEUS', '2 CYTOSOL', and '3 PERIPHERY'. The fourth is labeled '4 NUC'. To the right of the grid is a larger micrograph showing a cell with a white outline, labeled 'Cytoskeleton (actin filaments)' with the description 'Long, very straight and parallel filaments that outline the edges of the cell.' Below this is a section titled 'Examples' showing four small micrographs. At the bottom is a 'Submit' button flanked by navigation arrows.







Project Discovery

27

84.8%



Professor Lundberg



#### Analysis Submitted

Thank you for your contribution to the database.  
As a reward for your efforts, the Systems of ONE  
have credited you the following rewards:



Experience Points

85



ISK

85,000

#### Analyst Rank



Advanced Analyst

Total Experience Points

18,448

Rank 27

Until Next Rank

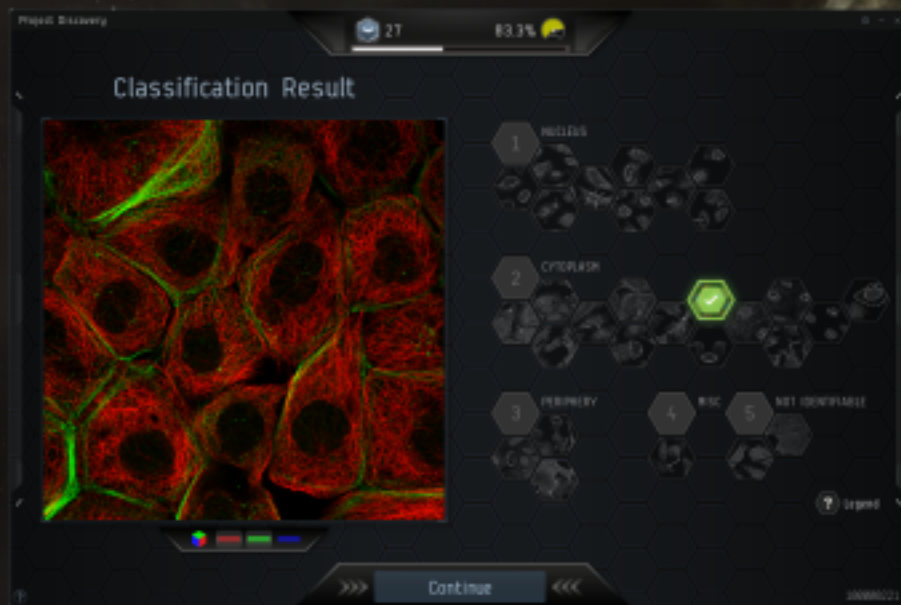
727



Continue



300886021



# First 24 hours

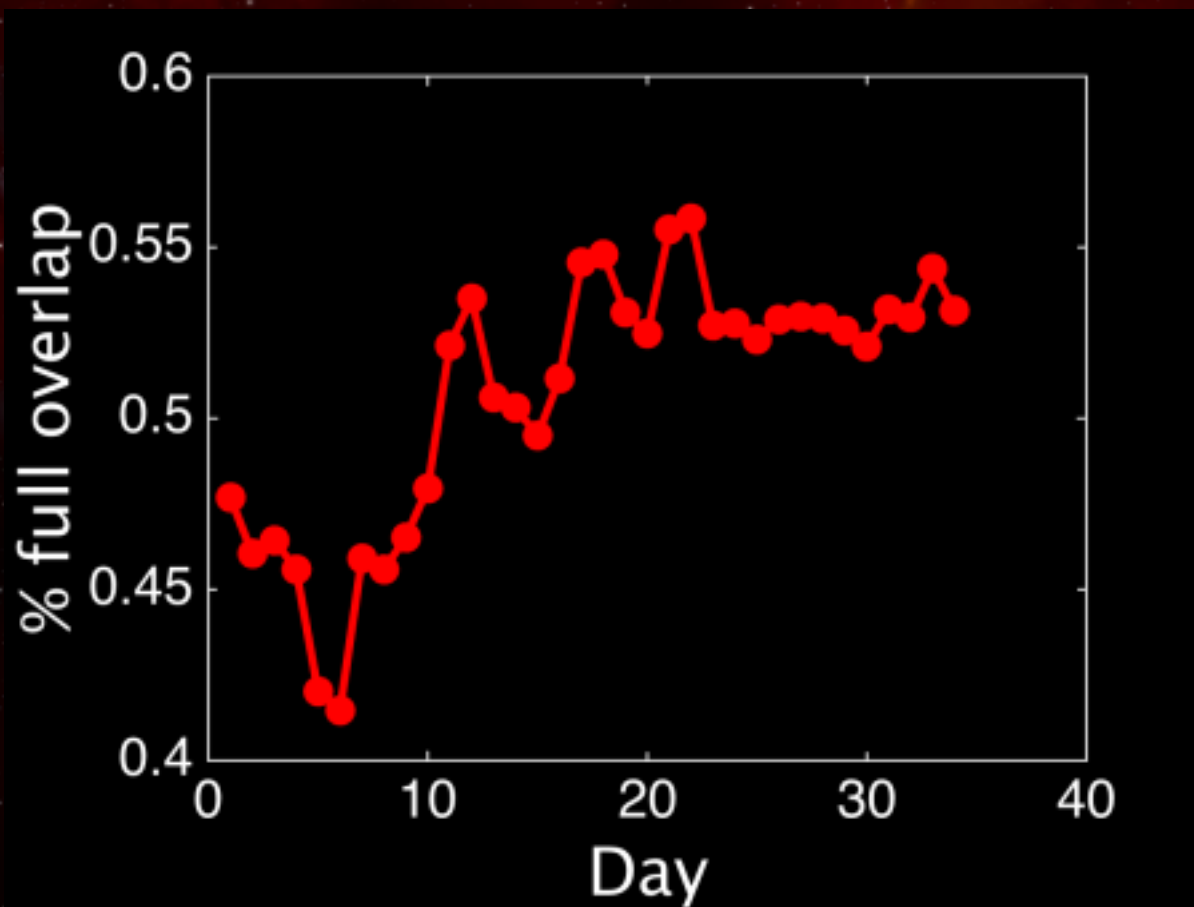
- 463,936 classifications
- 14,500 images reached consensus
- 45 SoE combat suit sold within 24 hours!







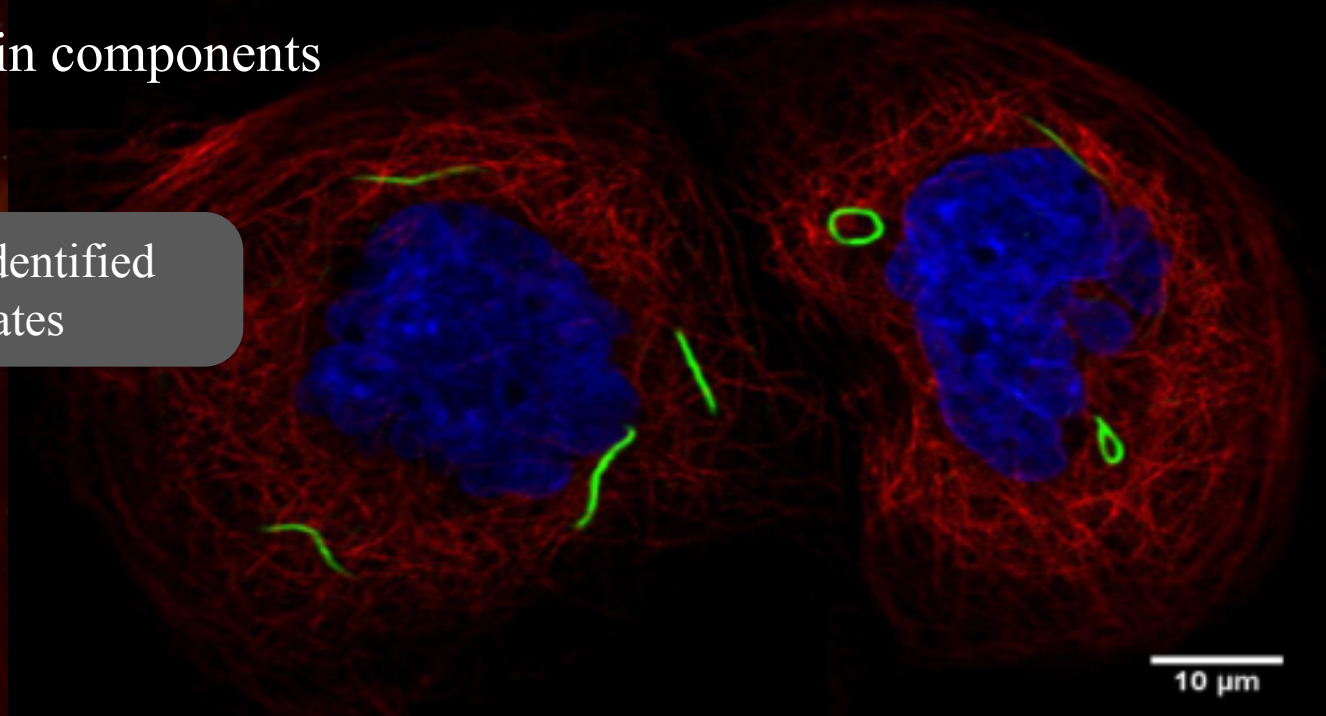
PROJECT  
DISCOVERY



# Rods & Rings

- Fairly uncharacterized cellular structure
- 3 known protein components

Project Discovery has identified  
109 new protein candidates





ProjectDiscovery
hot
new
rising
controversial
top
gilded
wiki
promoted

1 Will loading a new sample after selecting "Abnormal Sample" still report the sample as abnormal? (self:ProjectDiscovery)  
submitted 2 days ago \* by MaroneTle-Doll  
3 comments share save hide report

2 Sometimes you find a slide so clear you think it's a control sample! (i.imgur.com)  
submitted 2 days ago by Shivenvarp  
comment share save hide report

3 Collecting samples & questions you want to discuss in a PD class (self:ProjectDiscovery)  
submitted 2 days ago \* by HPA\_Illuminator (Official HPA member)  
11 comments share save hide report

4 Broken red channel (but still a valid sample?) (imgur.com)  
submitted 3 days ago by toubek  
4 comments share save hide report

5 Illuminator and Dichroic talking Project Discovery (live stream) with Caleb Ayrans and Ashteroth tonight (14/5) 18.00 EVE time (twitch.tv)  
submitted 4 days ago by HPA\_Illuminator (Official HPA member)  
comment share save hide report

6 Question for the CCP and HPA guys. (self:ProjectDiscovery)  
submitted 5 days ago \* by D04boy  
2 comments share save hide report

7 Here's a fun one for you guys, this one had me going wtf. (self:ProjectDiscovery)  
submitted 5 days ago by D04boy  
3 comments share save hide report

8 Red dye bleeding into Plasma Membrane? (self:ProjectDiscovery)  
submitted 5 days ago \* by Shivenvarp  
2 comments share save hide report

9 Subtle Slides (self:ProjectDiscovery)  
submitted 5 days ago by Shivenvarp  
18 comments share save hide report

10 ? Image of the week - Nuclear speckles from Selphentine!!! (proteomedia.org)  
submitted 5 days ago by HPA\_Dichroic (Official HPA member)  
2 comments share save hide report

11 Input for Project Discovery advance class at EVE Uni? (self:ProjectDiscovery)  
submitted 5 days ago \* by HPA\_Illuminator (Official HPA member)  
3 comments share save hide report

Poetry Contest (self:ProjectDiscovery)

“I love this mini-game so much for reasons I can’t quite explain. It’s like potato chips when assessing the samples... I’ll just do one more...”

“I’d participate even if there were no in-game rewards, knowing that the efforts feeds into a larger purpose.”

“The great thing about these blogs is that it triggers me to learn stuff I otherwise would never have looked up! I found myself reading articles, wikipedia and of course the HPA website to learn more.”

### Poetry competition:

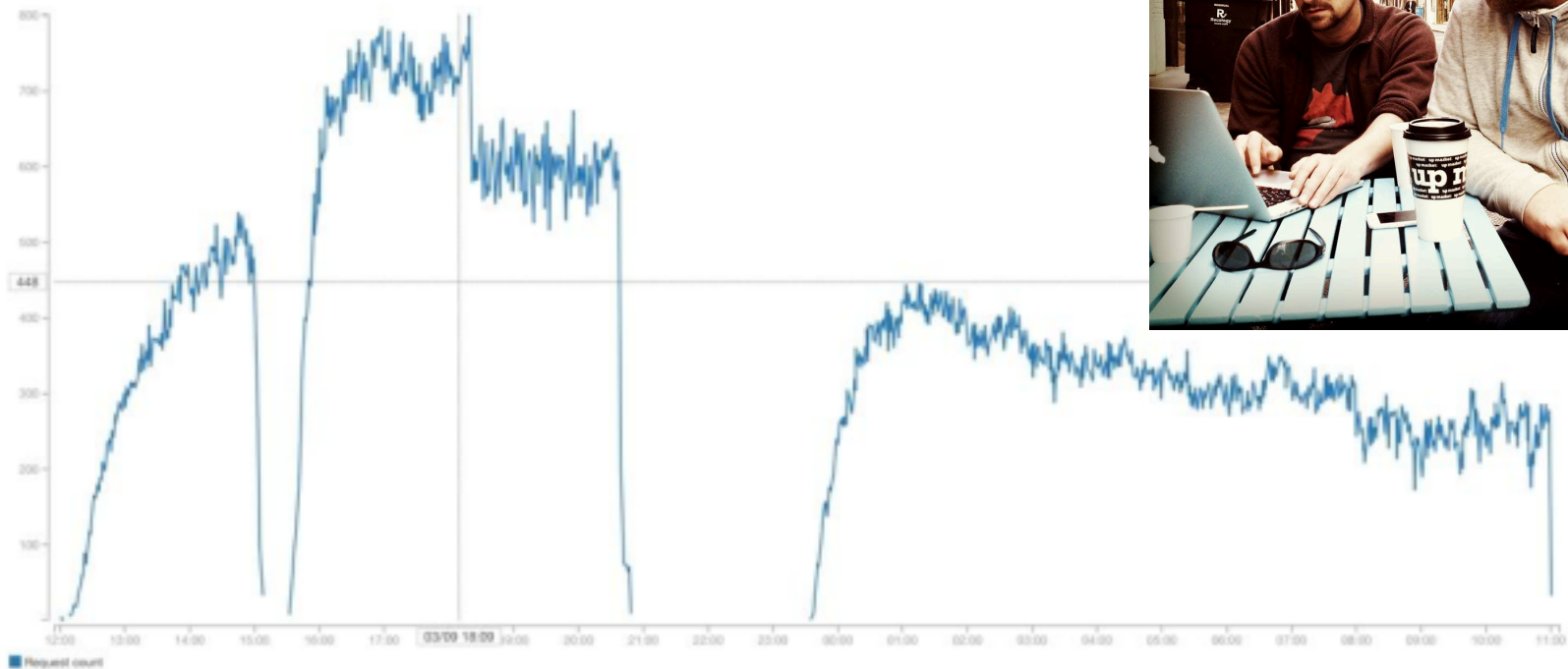
Last night I had such a spasm  
When I discovered the obvious chasm  
'Twixt the choice that they made  
And the choice that was staid  
They called reticulum ‘Cytoplasm’

Tubuli are red,  
Nucleus is blue,  
But it’s only the green  
That matters to you

07



### Submit classification



Close









## Mapping proteins with spatial proteomics

Vivien Marx

A number of techniques address the location of proteins within cells.

To maintain a cell's bustling activity, proteins handle specific tasks at particular locations. Researchers can detect these subcellular locations with spatial proteomics techniques and thereby obtain clues about protein function.

Localization also forms the basis of cellular maps. The team building the subcellular protein atlas<sup>1</sup>, part of the Human Protein Atlas, is localizing human proteins to organelles and substructures; MitoCarta<sup>2</sup> positions proteins in mouse mitochondria; and a map based on a technique called BioED<sup>3</sup> is in the making in the lab of Anne-Claude Gingras, a biochemist at Lunenfeld-Tanenbaum Research Institute at Mount Sinai Hospital in Toronto.

Gingras says that techniques to globally position proteins within a cell help researchers better understand poorly characterized proteins through a 'guilt-by-association' approach. Maps compiled with spatial proteomics techniques also help to characterize disease states.

Among the proteomic address-finding techniques are fractionation and mass spectrometry, live-cell tagging combined with mass spectrometry, and immunofluo-



Gamers will help to classify immunofluorescence images for the subcellular protein atlas. Here, a scenario involving analysis of a 'Jovian' sample.

**Fractionation and mass spectrometry**  
Common practice in spatial proteomics involves cell fractionation and purifica-

an organelle. He also performs electron microscopy (EM) of the isolated fractions to verify findings.

Networking: A game plan

U.S.



SOE LAUNCH RESEARCH PROJECT

08:02 / 03:38

Scientists are recruiting videogamers to help with research -- designed to simulate popular tasks to help sort through data and

## Videogamers Want Research

Scientists are recruiting thousands of gamers to help with research -- designed to simulate popular tasks to help sort through data and

Video

Life



Offices Give Workers Some 'Me Time'

A handful of companies have begun offering workers the option to take a break from their work to play a game. In addition to

LATEST

POPULAR

SEARCH

THE NEW YORKER

ELEMENTS

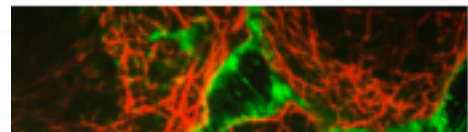
## BETTER RESEARCH THROUGH VIDEO GAMES



By Simon Parkin, JUNE 22, 2016

# How thousands of gamers are helping to decode the human body

GAMING / 28 APRIL 16 / by MATT KAMEN



PCWorld

Work. Life. Productivity.

NEWS REVIEWS HOW-TO VIDEO BUSINESS LAPTOPS TABLETS PHONES

Security Games Productivity Home Audio Business Software Photography Utilities



INDEPENDENT

News Voices Culture Lifestyle Tech Sport US election

## EVE Online players recruited by scientists to take part in crucial genetics research

ne players are  
world science  
et Project

Project Discovery brings real world scientific research to



# The Diversity of Exoplanets

The course will provide an overview of the knowledge acquired during the past 20 years in the domain of exoplanets. It will review the different detection methods, their limitations, and the information provided on the orbital system and the planet itself, and how this information is helping our understanding of planet formation.



## About the Course

The discovery of extra-solar planets orbiting other stars has been one of the major breakthroughs in astronomy of the past decades, changing our view on the formation of planetary systems, mainly drawn from the observation of the Solar System. Today, over 860 exoplanets are known and the Kepler satellite has recently identified over 2700 additional candidates, most of them awaiting for confirmation. We have learned that exoplanets are extremely common objects in the Universe and that planetary systems are much more diverse than originally predicted.

Our knowledge about exoplanets has dramatically increased thanks to the systematic monitoring of stars in the solar neighborhood by radial velocities,

## Sessions

Future Sessions ▴ ▾

[Add to Watchlist](#)

## Course at a Glance

🕒 2-3 hours/week

🌐 English





Hunting the Firehawk  
Go to Frostburn Canyon: ☐



263

+ 271

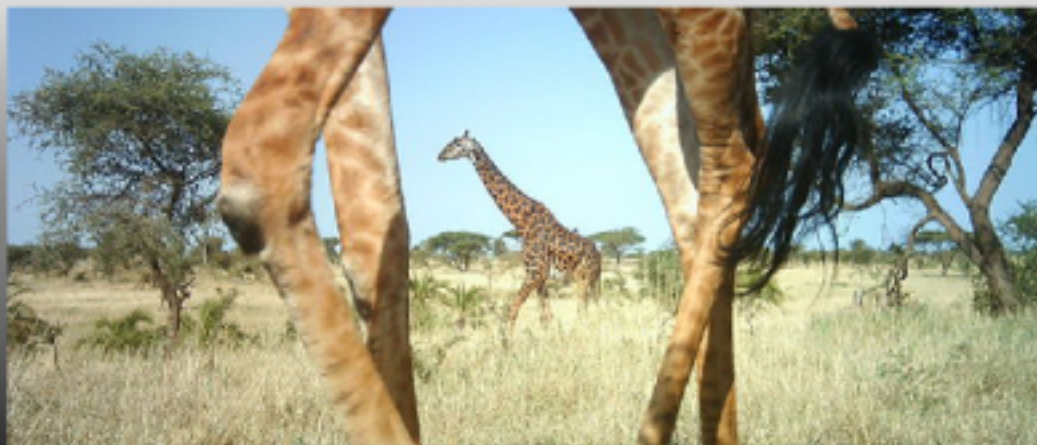
LV 10 Witch

3 / 3

20 / 180



New photo arrived

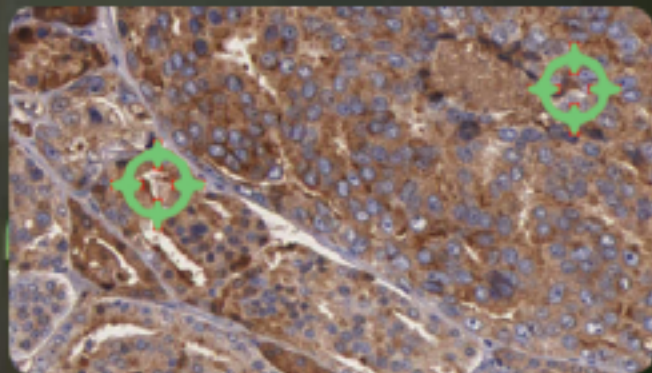


ANALYZE



STAT INV DATA MAP RADIO

SPECIAL



HP 90/90

LEVEL 1

AP 78/70

Y PERK CHART



FIELD THEORY (4)

### XENOMASS RESEARCH

Select which xenomass sample from the Gaosi Xenomass Archive you find the most close to the newly discovered sample and upload your result to the HQ Database.




[UPLOAD RESULT TO HQ DATABASE](#)

### QUEST LOG


QUESTS VICTORIES 1


[SHOW FAILED QUESTS](#) [SHOW COMPLETED QUESTS](#)


 **SPECIAL DELIVERY** -

We received an encrypted transmission. It reads: "The Culper Cell has interests in Freeland. Establish a covert network there."

☐ Perform "Establish Network" covert operation in Freeland [Locate](#)

 **//REDACTED//** +

 **CULTURAL BURDEN** +

 **XENOMASS RESEARCH** -

We have recovered microscopic samples of xenomass. The explorers have taken them to the Laboratory facilities of Gaosi.

☐ Start the analysis of the recovered samples [Locate](#)

PRIME XENO SWARM

2/2 54



NEXT TURN





GOROGOHL

REZOSU

x200

x6

## ANALYSING BIOLOGICAL SAMPLES

