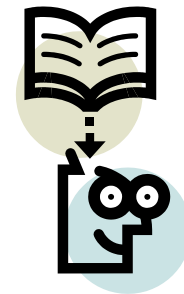
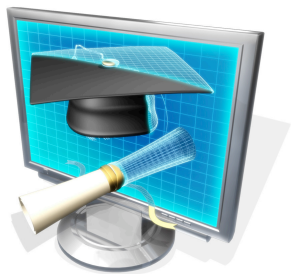


*Development and implementation of an  
interactive online resource linking  
foundation knowledge to anatomy,  
physiology and microbiology units for first  
year students*



Presenters:

Tracy Douglas and Susan Salter  
(School of Human Life Sciences; University of  
Tasmania)

## Role of “games” in higher education?

- Student fascination
- Embraces interactive learning (auditory, visual and kinaesthetic)
- How valid is it to use educational games in first year learning?



## Background of project

- Recognition of inability for first year students to link content between successive units of study
- Foundation knowledge taught in first year is extended and applied in second and third year units
- Academics frustrated “re-teaching” foundation knowledge
- MCQ-based game piloted in first semester unit; increased student engagement
- Positive student feedback on game use:

*I loved the game, it was most exciting and interesting and I learnt something too!*

*It was good to answer questions and get rewarded, I also liked attacking other students.*

*The cell biology game was lots of fun, learning at the same time.*



## UniTas TDG Investigators/Collaborators

- Awarded a University of Tasmania Teaching Development Grant in 2008 to develop an interactive online resource linking 3 first year HLS units
- Investigators/Collaborators on TDG project:
  - Tracy Douglas (Lecturer, School of HLS)
  - Susan Salter (Lecturer, School of HLS)
  - Dr Karen Swabey (Senior Lecturer, Centre for Human Movement Studies, UniTas)
  - Mike Capstick (IT Lecturer, TAFE Tasmania)
  - Kevin Lyall (Instructional Designer, School of HLS)
  - Laura Maddock (Tutor, School of HLS)
  - HLS students (Two 3<sup>rd</sup> year undergraduates and one postgraduate)

## The Learning Resource

- Game platform developed involving specific assignments to be achieved through correctly answering MCQ, achieving upgrades and/or challenging other players
- MCQ are at 5 levels of difficulty; negative scoring occurs for incorrect answers
- Students accrue energy points (ATP) for correct answers
- Students will be introduced to the game resource during a compulsory practical session

## Game format



Student logs onto game



Student enters level 1 (cell biology)



Student successfully completes level 1 assignment



Access to level 2  
(anatomy and physiology)



Access to level 3  
(microbiology)



Complete level 2 and level 3 assignments



Complete game and receive reward

## Alien Tissue II

### XenoPhage Laboratories - Login

Xenophage Laboratories is a secure facility.  
Select a Laboratory and Login to Enter.

The Cell Biology Lab must be completed  
before Accessing other Labs

Select a Laboratory

UserName

Password

## Alien Tissue II

### XenoPhage Laboratories - Login

Xenophage Laboratories is a secure facility.  
Select a Laboratory and Login to Enter.

The Cell Biology Lab must be completed  
before Accessing other Labs

Select a Laboratory

- Select a Laboratory
- Cell Biology Lab
- Anatomy & Physiology Lab
- Microbiology Labs





**Alien Tissue II**

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated



**Cell Biology - Background Information**

Memo: Cell Biology Mission  
 From: CC Black, CEO - XenoPhage Labs  
 To: beep

You and several other researchers have been asked to independently prevent a group of cultured cells from becoming cancerous. This population of cells has been repeatedly attacked by a rare virus which is destroying the metabolic and reproductive machinery of the cells. As a result, the cells are losing control of their growth and division processes.

In order for the population of cells to survive you need to slow down the mutational effect of the virus and improve the enzyme and immune status of the cell population. Energy in the form of ATP will help you complete this assignment.

You can increase your ATP level by using your knowledge of cell biology to correctly answer questions, and by successfully attacking other Researchers, hindering their progress. You can buy upgrades when your ATP level is high enough. To successfully attack another Researcher, you need to upgrade your Immune Cells, Mutation Resistance, and Enzyme Levels.

Menu

**Instructions**

**Earn Credits**

**Reports**

**Upgrades**

**Exit**

Messages

no new messages

**Send Message**

### Alien Tissue II

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated



### Earn ATP Level

Earn ATP Level by Answering Questions  
Additional ATP Level earned so far

Click the Next Question button to earn ATP Level.  
To Quit the Quiz, click the **Bank ATP Level** button.

**Bank ATP Level**

**Next Question**

### Alien Tissue II

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated



### Earn ATP Level

Earn ATP Level by Answering Questions  
Additional ATP Level earned so far **0**

Click the Next Question button to earn ATP Level.  
To Quit the Quiz, click the **Bank ATP Level** button.

Selecting the Correct Answer is worth : 10

Question 186: An erythrocyte (red blood cell) placed in isotonic saline would:

A) shrink

B) stay the same

C) dissolve

D) explode

E) swell

### Alien Tissue II

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated



### Earn ATP Level

Earn ATP Level by Answering Questions  
Additional ATP Level earned so far

Click the Next Question button to earn ATP Level.  
To Quit the Quiz, click the **Bank ATP Level** button.

Is this Your Final answer ?

Question 186: An erythrocyte (red blood cell) placed in isotonic saline would:

A) shrink

B) stay the same

C) dissolve

D) explode

E) swell

### Alien Tissue II

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated



### Earn ATP Level

Earn ATP Level by Answering Questions

Additional ATP Level earned so far **10**

Click the Next Question button to earn ATP Level.  
To Quit the Quiz, click the **Bank ATP Level** button.

**Bank ATP Level**

You have won 10 units.

**Next Question**

Question 186: An erythrocyte (red blood cell) placed in isotonic saline would:

**A) shrink**

**B) stay the same**

**C) dissolve**

**D) explode**

**E) swell**

### Alien Tissue II

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated



### Earn ATP Level

Earn ATP Level by Answering Questions  
Additional ATP Level earned so far **20**

Click the Next Question button to earn ATP Level.  
To Quit the Quiz, click the **Bank ATP Level** button.

Selecting the Correct Answer is worth : 10

Question 126: The genetic material of a human cell is:

- A) RNA
- B) the nucleus
- C) DNA
- D) a single chromosome
- E) an amino acid




**Alien Tissue II**

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated

**Alien Tissue II**

**Hint**

The genetic code is found in DNA.



**OK**

Click To

Incorrect

Question 126: The genetic material

- A) RNA
- B) the nucleus
- C) DNA
- D) a single chromosome
- E) an amino acid

hits.

### Alien Tissue II

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	50	High	Elevated



### Earn ATP Level

Earn ATP Level by Answering Questions  
Additional ATP Level earned so far **10**

Click the Next Question button to earn ATP Level.  
To Quit the Quiz, click the **Bank ATP Level** button.

**Bank ATP Level**

Incorrect, the Correct response was C. You have lost 10 units.

**Next Question**

Question 126: The genetic material of a human cell is:

A) RNA

**B) the nucleus**

C) DNA

D) a single chromosome

E) an amino acid





**Alien Tissue II**

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	60	High	Elevated



**ATP Level Update**

beep, your ATP Level has been updated  
Current Status

ATP Level	60
Mutation Resistance	High
Enzyme Levels	Elevated
Immune Cells	8

Menu

- [Instructions](#)
- [Earn Credits](#)
- [Quiz Credits](#)
- [Infect Credits](#)
- [Reports](#)
- [Upgrades](#)
- [Exit](#)


Messages

Earn credits

[Send Message](#)



Alien Tissue II					
Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	8	60	High	Elevated



### Infect Another Player

beep  
 If you decide to Infect another player  
 Your Mutation Resistance, Enzyme Levels and Immune Cells will be compared.  
 If you win you will gain some of their ATP Level.  
 If you lose you will lose some of your ATP Level.

Choose a Player to Infect  
 or another Menu option to Cancel

dougal

Infect

Menu

- Instructions
- Earn Credits
- Quiz Credits
- Infect Credits
- Reports
- Upgrades
- Exit

Messages

Attack a Player

Send Message

**Alien Tissue II**

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	7	72	High	Elevated



**Infect Results**

**Report: You Won**

The results of your attack on zeppity  
 Your attack strength was 72 units  
 zeppity had a strength of 63 units  
 ATP Level Won : 12  
 Immune Cells Lost : 1  
 Immune Cells destroyed: 1

beep			zeppity		
Immune Cells	Mutation Resistance	Enzyme Levels	Immune Cells	Mutation Resistance	Enzyme Levels
7	High	Elevated	6	High	Elevated
Strength: 72			Strength: 63		

Menu

- [Instructions](#)
- [Earn Credits](#)
- [Quiz Credits](#)
- [Infect Credits](#)
- [Reports](#)
- [Upgrades](#)
- [Exit](#)

Messages

- [Attack a Player](#)
- [Send Message](#)

**Alien Tissue II**

Researcher	Laboratory	Immune Cells	ATP Level	Mutation Resistance	Enzyme Levels
beep	Cell Biology	7	72	High	Elevated



**Current ATP Level Rankings**

Ranking	Player	ATP Level
1	dougal	310
2	pseudomonas	105
3	dougal1	100
4	guest3	100
5	guest4	100
6	headcase	100
7	viral	100
8	guest	90
9	herbertk	90
10	beep	72
11	guest2	50
12	laura0007	50
13	q	32

Menu

- [Instructions](#)
- [Earn Credits](#)
- [Reports](#)
- [Hall of Fame](#)
- [Ranking Report](#)
- [Player Reports](#)
- [Infect Results](#)
- [Upgrades](#)
- [Exit](#)

Messages

Ranking Report

[Send Message](#)

## Challenge of the Project

- To enable student to make connections between their academic units of study
- To cater for students covering a wide range of diverse academic backgrounds, learning styles, generic skills and interests
- To cater for first year students from 7 different degree programs



# Discussion

- ***How can students be encouraged to participate in educational games? Is it educational to include games which involve “combat”?***
- **What game format(s) would be most suitable to fulfil the pedagogical role in cementing foundation knowledge?**
- ***How can educational games be successfully implemented into the first year curriculum?***
- **What mechanisms can be utilised to successfully evaluate the success of game-based first year learning?**

