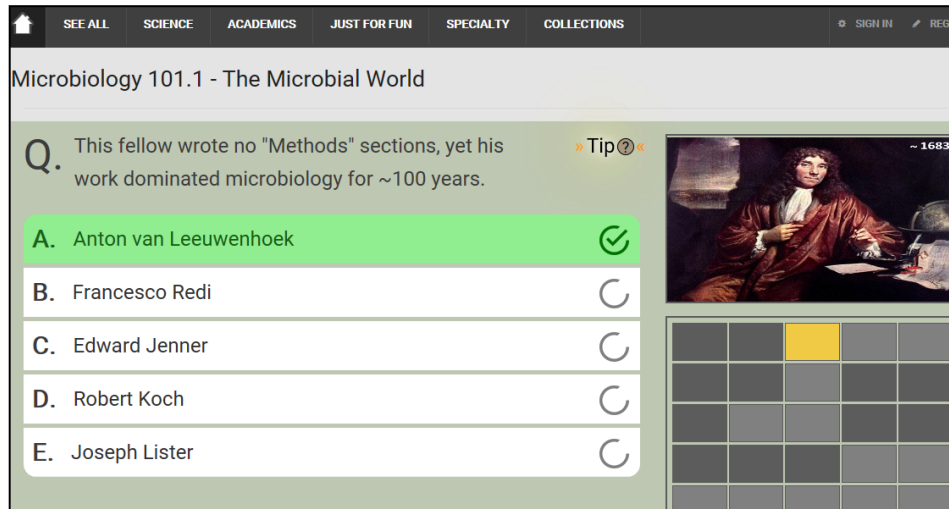


# Digital Maze Games

**MazeFire.com**

***Your NEW Education Destination***

**Donald M. O'Malley, PhD**  
**Chief Strategy Officer**  
**MazeFire LLC**

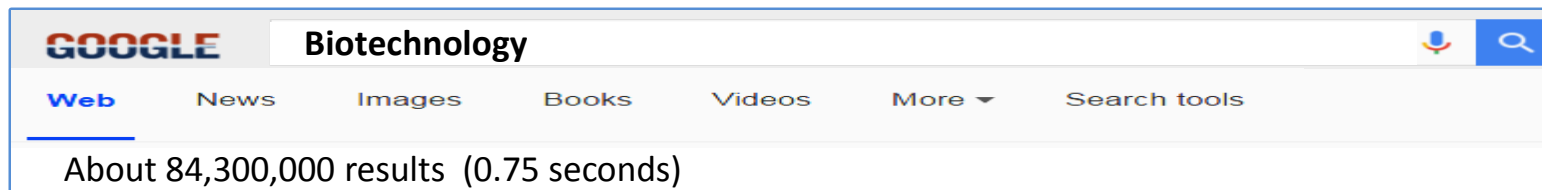


The screenshot displays the MazeFire.com website interface. At the top, there is a navigation bar with links: SEE ALL, SCIENCE, ACADEMICS, JUST FOR FUN, SPECIALTY, and COLLECTIONS. On the right side of the navigation bar are links for SIGN IN and REGISTER. Below the navigation bar, the page title is "Microbiology 101.1 - The Microbial World". The main content area features a quiz question: "Q. This fellow wrote no 'Methods' sections, yet his work dominated microbiology for ~100 years." To the right of the question is a "Tip" icon. Below the question is a list of five multiple-choice options: A. Anton van Leeuwenhoek, B. Francesco Redi, C. Edward Jenner, D. Robert Koch, and E. Joseph Lister. Option A is highlighted in green and marked with a green checkmark. To the right of the options is a portrait of Anton van Leeuwenhoek, with the text "~ 1683" next to it. Below the portrait is a 5x5 grid maze game, with the top-middle cell highlighted in yellow.

# An Onslaught of Information

**Students** are drowning in an onslaught of information

**Pipelining knowledge** is tedious and ineffective



**Professors** struggle to maintain student attention

**Professors (and teachers)** have few good options

**This issue hurts** throughout the \$1 Trillion US Education Market

**MazeFire provides** a unique solution  
at the nexus of *Gaming* and *HigherEd*




# Digital Maze Games are Fun

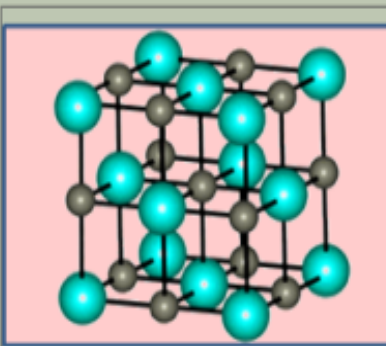
## Each Question is a Puzzle


Q. In chemistry, the term \*unit cell\* refers to

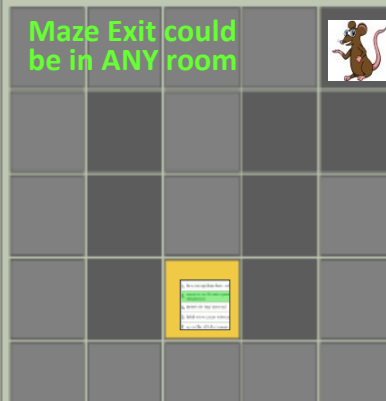
» Tip ? «

**TIPS really help** 

- A. the volume occupied by any atom in a crystal ☐
- B. a segment of a crystal lattice that represents its extended structure** ☒
- C. the simple cubic class of atomic crystal ☐
- D. the body centered cubic class of atomic crystals ☐
- E. any crystal that exhibits rhombic symmetry ☐



Maze Exit could be in ANY room 




## 20 Questions are organized into a Maze

# Digital Maze Games make *every* Learning Venue Better



and they are very easy to make, so...

# ...so it's a GOOD THING we have a Patent!

		 US008172577B2	
(12) <b>United States Patent</b> <b>O'Malley</b>	(10) <b>Patent No.:</b> <b>US 8,172,577 B2</b> (45) <b>Date of Patent:</b> <b>May 8, 2012</b>		
(54) <b>SYSTEM AND METHOD FOR KNOWLEDGE TRANSFER WITH A GAME</b>		6,907,223 B2 6/2005 Murphy 6,935,954 B2 8/2005 Sterchi et al. 6,966,831 B2 11/2005 Miyaki et al. 6,968,375 B1 11/2005 Brown 7,152,034 B1 12/2006 Layng et al. 7,182,600 B2 2/2007 Shaw et al. 7,195,490 B1 3/2007 Scafidi et al.	
(75) Inventor: <b>Donald M. O'Malley</b> , Needham, MA (US)		2002/0160347 A1 * 10/2002 Wallace et al. .... 434/322 2003/0015839 A1 1/2003 Ignatiev 2003/0201603 A1 10/2003 Pepper 2004/0137981 A1 7/2004 Gauselmann et al. 2005/0239538 A1 * 10/2005 Dixon ..... 463/20	
(73) Assignee: <b>Northeastern University</b> , Boston, MA (US)		OTHER PUBLICATIONS Morawska, Monika. MindMaze. Super-Memory.com [online], Oct. 3, 2000. [retrieved on Oct. 21, 2010]. Retrieved from the Internet: < <a href="http://www.super-memory.com/sml/colls/mindmaze.htm">http://www.super-memory.com/sml/colls/mindmaze.htm</a> >.*	
( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1146 days.			
(21) Appl. No.: <b>11/881,511</b>			
(22) Filed: <b>Jul. 27, 2007</b>		(Continued)	
(65) <b>Prior Publication Data</b>		Primary Examiner — Xuan Thai	

## plus we have a second patent (provisional) pending

- another UNIQUE way of merging brain networks & content
- conceptually easier than the Digital Maze
- should spread more quickly into early K12

## Who are Our Competitors?

- 📁 **Glut of Information**, Clamor of EdTech Minions -  
leads Teachers and Professors to do nothing
- 📁 **Proprietary Resources**  
e.g. publishers, TutorVista  
Open-Access Resources  
e.g. Khan Academy, ChemWiki  
Other Content Providers e.g. Kaplan, Princeton Review
- 📁 BUT there is ***nothing like*** the Digital Maze Game  
and our efforts COMPLEMENT our competitors'  
***so they can benefit*** by partnering with MazeFire

# Competitive Advantage I

## MazeFire Landscape has Unique Attributes

- 📁 most games & Semester Paks are click-n-play
- 📁 we make lectures fun & motivate students
- 📁 we do NOT ask Professors to do ANY work
- 📁 we make their students smarter
- 📁 we build life-long relationships
- 📁 **we are TOO valuable for College Freshman to pass up**

CHECK OUT THE LATEST GAME REVIEWS

			
★★★★★	★★★★★	★★★★★	★★★★★
MEDscience Physiology	Military AirPower 101	Stonehenge: Ancient Mysteries	Neuro Mid-Term: Synapses, Receptors



# Competitive Advantage II

## MazeFire is Vastly Scalable

### **Need just 20 Questions per Maze**

we sell 10-maze VIP Semester Paks for 2.99

### **Messy Contracts NOT Required**

Free to ALL Teachers and Professors

They assign Paks to students (VIP or FREE Paks)

Good or Free for Districts with fewer Resources

### **Suitable for Every Topic and Level of Education**

from K12, SAT prep to MCATs and the BAR exam

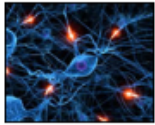
good for tutoring, MOOCs, test prep

good for corporate & govt. mandated training, DoD

# Current Status

**YOU can play 100+ Games TODAY  
BUT ...this is just the first step**

## Biology - Neuroscience



### Neuro Mid-Term

BNS and Biology ma



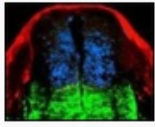
### Neuro for Kids

See what you know



### NeuroMaze Level 1

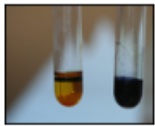
If this introductory le



### NeuroMaze Level 2

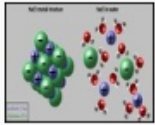
Level 2 Neurobiology  
Neuro Mazes.

## Chemistry - General



### Chemistry 101

For students taking a



### Chemistry 102

A maze for students

## Cool Stuff - General



### Classic Rock & Roll 101

A small, eclectic collection to test your knowledge of classic rock bands,



### Football 101

For the WOULD BE football fan



### Hominid Games 101

Reflects ideas from "The Rise of  
path to humanity!



### Stonehenge: Ancient Mysteries 101

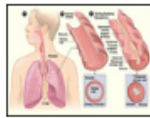
Stonehenge's scientific and spir



### The Beginnings of Jazz 101

Think you know the beginnings

## Health Care & Medicine - General



### Asthma 101

Got Asthma? Test your Asthma  
accessqualityhealthcare.com for



### Nutrition 101

Test your basic knowledge of nu

## Biology - Biology 101 Semester Pak

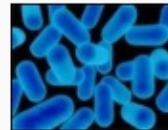
1.



### Biology 101.1 -- Cells

Bio101.1 (Cells) is the first maze in our Bio101 Semester  
Biology course.

2.



### Biology 101.2 -- Biochem Tool Kit

This second maze in the Bio101 Semester Pak tests your  
Answers Page for fun facts!

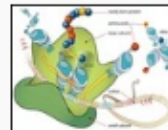
3.



### Biology 101.3 -- Genes & DNA

Bio 101.3 explores the molecular world of DNA, including

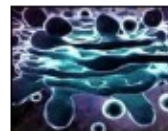
4.



### Biology 101.4 -- From Genes to Proteins

Bio 101.4 journeys across Transcription and Translation

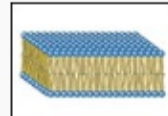
5.



### Biology 101.5 -- Proteins & Organelles

In Bio101.5 follow Proteins on the March through the ER  
compartments.

6.



### Biology 101.6 -- Membranes

The Plasma Membrane, the edge of the cell, is the bound

**CLICK the ALL MAZES button to SEE ALL**

# Future Competitive Advantage

- 📁 **Patent Protection through 2029**  
+ new provisional patent pending
- 📁 **We can offer every type of EdTech resource**  
but *only* MazeFire LLC can offer DM Games
- 📁 **Digital Maze Games are Forever**  
not fleeting technology, not a social fad
- 📁 **Workers increasingly need *knowledge constructs***
- 📁 **MazeFire aspires to become an Academic Standard**  
we offer lifetime access to a Trusted Resource

# Single Market Business Model

- 📁 **Model is Designed to Resolve Conflicts** e.g.
  - licenses to publishers may conflict with student sales
  - student sales may conflict with sales to Kaplan
- 📁 **Single Market Model: 1 subscription, every game**
  - maximizes customer pool
  - makes *subscription-value* compelling
  - means Teachers, Professors, MOOCs will gladly assign
  - can retain customers as life-long learners
- 📁 **SMM does not preclude proprietary games**
  - e.g. to Kaplan, Pearson, US Military, Scientific American







# Revenue Model

- 📁 **One-Time Authoring Cost:**
  - \$800/maze or \$8000 per **Semester Pak** (10 games)
  - 1 million potential US users for Large Courses (e.g. Chem101)
- 📁 **Single Semester Paks Revenue Targets**
  - $\$3/\text{Pak (individual purchase)} \times 50,000 = \$150,000$
- 📁 **Next Objective:** Gamify Freshman Year of College
  - make \$20 Annual Fee *Too Valuable* to pass up\*\*
  - 5 million new Freshman every year, 1/3<sup>rd</sup> will like
- 📁 **Longer Term Goal:**
  - 1 million new subscribers each year for 20 years

\*\*Note that selling subscriptions does not prevent us from **sub-licensing technology**

# Seed Funding Needs

## **\$600,000 would enable**

-  Game Development for 3 years
-  gamification of all 4 Years of College
-  engagement of 20 million college students
-  substantial outreach, ads, conferences
-  badges, certifications, launch of new game
-  launch of recreational & serial games

# Milestones & Revenues

**Based upon \$600,000 investment:**

## 2016

*Jan-Feb:* recruit and train 2 maze producers. Dr. O'Malley will train.

*Mar-May:* complete Freshman Year gamification

*June-Aug:* complete 12 VIP Paks (\$3 each), offer **\$20 annual subscription\*\***

*Sept-Dec:* finalize teacher tools, badges and rankings

launch serial games e.g. Game of Thrones, The Week in Sports

## 2017

*Jan-Mar:* tailor collections to AP, tutors, test-prep companies

increase subscriber base to **15,000 x \$20 each**

*Apr-June:* expand *consumer health* and *technology* collections

*July-Sept:* promote to AP teachers, MOOCs, tutors, customer outreach

w/50+ Paks ↑ subscriber base to **75,000 x \$20 each**

*Oct-Dec:* link K12 collection to Khan Academy games

refine outreach to Teachers, Professors & college students

**By January 1<sup>st</sup>, 2018:** goal is 200,000 subscribers x \$20 each.

**\*\*Semester Paks** can be individually purchased now for \$3

# Our Team



**Don O'Malley, Co-Founder, Project Leader**

Neurobiology Professor at NU  
PhD in Physiology & Biophysics

**MazeFire** is in partnership  
with **OBS** who provided  
software development and  
AWS implementation



**Ravindra Jain, Chief Technology Officer**

Software Engineer, Java Enterprise  
Principal, **Orion Business Solutions**



**Ankit Chansoriya, Board Member / Advisor**

Founder, **Orion Business Solutions**  
MazeFire Partner, Business Advisor



**Brian Griffiths, Co-Founder, Board Member**

Created MazeFire 1.0 program, authoring tools  
MazeFire Rep, UMass Boston



# Thank You!

**MazeFire Games**  
**will soon be everywhere**



The **Tortoise** route is OK  
BUT we'd rather be a  
*seriously industrious* **Hare**

*Our #1 Goal is to boost STEM education  
across the US and to make learning of all  
kinds more fun for everyone from 8 to 80.  
We welcome inquiries from Investors,  
Publishers and other Strategic Partners.*

**Donald M. O'Malley**

Chief Strategy Officer, MazeFire LLC  
and Biology Professor, NU

[d.omalley@neu.edu](mailto:d.omalley@neu.edu)

[www.mazefire.com](http://www.mazefire.com)








@MazeFire56

781-707-8578

# Many Markets, one modest fee



The Digital Maze algorithm is an entirely new concept which has the potential to shake up the entire education industry, including

-  Recreational Learning
-  Test Prep and MOOCs
-  Active Learning for STEM, Pre-Tests
-  K12 with Parent Engagement
-  Science Tourism (Museums, Nature Walks, etc.)
-  + Serials, Pop Culture
-  + Automated Customer Education

A supplement that students will actually like  
A supplement that professors will actually use

### 30 Large Textbook Markets

Calculus I	Calculus II	Computer Programming
Chemistry	Organic Chem I	Organic Chem II
Biology	Cell Biology	Microbiology
Pharmacology	Nutrition	Anatomy & Physiology
Economics	Physics I	Physics II
Finance	Marketing	Accounting
US History	Government	International Relations
Psychology	Statistics	Electrical Engineering
Geology	Marine Science	World History
Philosophy	Communications	Criminal Justice

## **STRATEGIC PARTNERS AND CONTRIBUTORS**

MEDscience Physiology HMS

Prof. Barbara Waszczak, College of Health Sciences, NU

Centurion Technologies, LTC Ingrid Centurion (US Army aviator)

Attorney Steve Saunders

Attorney Kyle Turley

Prof. Mason, Astrobiology101

Prof. Darvill, Stonehenge: Mysteries

Meridian Academy, Boston MA

Many Northeastern University Students

+

Nominations for Board of Advisors Welcome!

# HOW TO MAKE A DIGITAL MAZE GAME

## The Story of Hominid Evolution an academic just-for-fun MazeFire game

### 1. Collect Some Facts

- Homo habilis used tools
- H. erectus ≈ weed species
- culture: a recent innovation

### 2. Write some Questions

#### 1. Of the family hominidae, our closest living relative is

- A. Homo neanderthalensis
- B. Homo habilis
- C. Australopithecus afarensis
- D. Ardipithecus ramidus
- E. Pan troglodytes (chimpanzee)

Hint: Living!

### 3. Load 20 Questions into Maze

Hominid Games 101

**Q** Hominids rapidly advanced across the Pleistocene (~ the last 1.8 million years), an epoch characterized by

Tip ■

- A increasingly cold weather
- B very hot, very dry weather
- C hot spells with regular monsoons
- D a stable, optimal climate for primates
- E chaotic changes including intermittent ice ages

Rules Restart Maze 4:13



### 4. Provide all Q&A at Maze Exit

Hominid Games 101

1. Of the family hominidae, our closest living relative is

- A. Homo neanderthalensis
- B. Homo habilis
- C. Australopithecus afarensis
- D. Ardipithecus ramidus
- E. Pan troglodytes (chimpanzee)

Hint: Living!

2. Aptly named, the hominid who first exhibited meticulous, repetitive production of deliberately shaped stone tools was

- A. Australopithecus afarensis
- B. Homo habilis
- C. Homo erectus
- D. Homo ergaster
- E. Paranthropus robustus

While modern day chimps use tools (e.g. rocks to break open nuts) they do not produce shaped stone tools for specific uses. The fossil record associates sharp flakes (made 1 tool) with H. habilis (handyman) dating to at least 2.6 million years ago.

3. Appearing 1.5 million years ago, \_\_\_\_\_ was taller, thinner with larger females. They ushered in a new age of lithic technology.

- A. Australopithecus afarensis
- B. Homo erectus
- C. Homo habilis
- D. Homo neanderthalensis
- E. Homo sapiens

Erectus ruled the earth for the better part of a million years! Or at least when she was not being crushed by elephants or eaten by lions...but this is where the human cognitive story truly began, perhaps with greater cooperation that allowed the emergence of "specialists" within clans (mbho).

4. Which is NOT one of the reasons suggested by Coolidge and Wynn (2009) for the abnormally large brains that emerged in hominids?

- A. spatial navigation abilities
- B. expert procedural learning
- C. problem solving and planning
- D. grammatical language
- E. symbolic culture

Additional Information:  
Check out: "The Rise of Homo Sapiens", 2009. Also Pete Shelley for BEST Homo Sapiens song

It's so EASY  
even a Cave Man  
could do it!

# Explanations Pages (at Maze Exits) are ...



## Precious Learning Moments


📁 Players “discover” what they got Right & Wrong

Explanations fill in palpable Knowledge Gaps

Elevated Motivation means Synaptic Boost, Better Retention

Players see Progress in completing paks, moving to new topics

Teachers get standard or custom class summaries


**Q1. The term "cell" comes from** 

- A. rooms found in prisons
- B. bacteria seen under a microscope**
- C. spontaneous generation experiments
- D. cork seen under a microscope**
- E. unidentified drawings

*Small cavities seen under a microscope in cork (from the bark of Cork Oak trees) were dubbed "cells" (little rooms) by Robert Hooke in his 1685 book, Micrographia, which became the first scientific best seller.*

**Maze Exits** offer prime learning moments as players see how they did

---

**Q2. The Cell Theory of life is derived from** 

- A. studies of plant parts published by Matthias Schleiden in 1838
- B. observations of animal cells by Theodor Schwann
- C. discussions between Schleiden and Schwann in 1837** ← **incorrect**
- D. the theory of cell division by Robert Remak conceived before 1855
- E. ALL of the above** ← **correct!**

*Science is collaborative as e.g. when Schleiden and Schwann were discussing observations of plant and animals cells which helped crystallize the cell theory of life. Rudolf Virchow, who discovered leukemia cells and made other contributions, is often credited with the idea that new cells are derived by cell division, built upon Robert Remak's work.*

Maze Games challenge, but incremental-help encourages ALL players to reach the Maze Exits. See Notes.

# Alignment with New Schools *Tools & Services*



## Good for Diverse Learners / Venues

### Low Bandwidth

Good for Smart Phones and Tablets

Downloadable App Version under development

### Teacher Customization

Teachers can edit their copy (pending) i.e. Q&A, Explanations

BUT Paks will be great “as is” because our motto is:

“nothing could be easier” since Teachers are VERY busy!

### Parent & Student Engagement

Students can explore on their own, boost their performance

For K-6 we encourage Parents to play along, share knowledge

### MazeFire is Engaged with Boston Students

MEDscience Pak for HMS program w/ inner city high schools

Meridian Academy is a culturally diverse, Jamaica Plain project school

Professor O’Malley has participated in Louis Stokes-LAMP, other programs

# MazeFire changes the way we learn



## The Digital Maze Solution

### Boosts Motivation

Our natural motivation to solve maze puzzles is amplified by extrinsic rewards e.g. extra-credit, badges

### Perfect for Cognitive Advancement

Digital Mazes lead players to think about what they do and do not know—which is most useful in STEM domains with complex concepts and models

### Makes learning Fun

Students love in-class game breaks and will play with friends at night to break the drudgery of re-review

### Great Tool for Teachers & MOOCs

Teachers need only send a link. Or can project in class. MazeFire games are click 'n play by design



# EXTRA SLIDES

US Education Market is by itself worth \$1 Trillion  
which MazeFire will nicely bolster



## Revenue Model

### Free Content + VIP Semester Paks

Large Permanent Free Collection for ALL

2.99 VIP Paks = 1 song = low entry barrier

Write Once (e.g. Chem101), Sell to Many = good markup

### Low-Cost Annual Subscription Fee

\$20 annual fee for VIP access will make Coeds better in every subject

**\$20 is a cost that *no college freshman* (5 million) can afford to forego**

US Patent precludes us from being undersold

### Single Market Model will enable massive growth

Every Competitor is a Potential Partner

Immediate Target: every college freshman

Next Target: tutors, test-prep companies, MOOCs

With Funding: span K12 space

Future Markets: DoD, corporate, publishers, recreational

5 million new College Freshmen every year



## Revenue Generation / Marketing



Shopping Cart launches this month

just completed first VIP Semester Paks



EVERY teacher has asked for more games

because students have ALWAYS demanded more games  
positive feedback from hundreds & hundreds of students



Immediate Goal: gamify Freshman Year

30 Semester Paks encompass all Large College Courses  
Fresh. + Sophomores = 10 m. NEW customers/year



MazeFire is not Eliminating ANY Venue

MazeFire will make EVERY venue better  
Life-Long Learning + serials + recreational => digital staple  
Educational Entertainment is not a Zero Sum Game

# Students view Learning as tedious and boring



## The Problem

why should you play DM games?  
with each game you will get smarter,  
usefully smarter

### Information Overload

Our brains struggle with complex concepts and new facts, but their integration is central to Cognitive Advancement – especially in STEM fields

### Overload saps Motivation

Students express dismay and hopelessness, compounded by panic before exams.

### Few Methods invoke Deep Learning

There are few good methods to spark real introspection and fewer that easily generalize