



University
of Glasgow

School of
Life Sciences

ELECTRONIC
RESEARCH
NOTEBOOK TRIAL

Supervisors: Mary McVey & Angela Watt

Students: Roza Dimogkioka & Lukas Visockas

During the research project:

- We went completely paperless.
- Tried RSpace and Microsoft OneNote as electronic lab notebooks (ELNs).
- Used Microsoft Teams as a communication tool in conjunction with ELNs.



Coming up...



ELNS: ADVANTAGES
AND LIMITATIONS.



IMPLEMENTATION
IN EDUCATION.



ONENOTE VS
RSPACE.



MICROSOFT TEAMS.



REFLECTION ON
OUR EXPERIENCE.

Coming up...



ELNS: ADVANTAGES
AND LIMITATIONS.



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Advantages

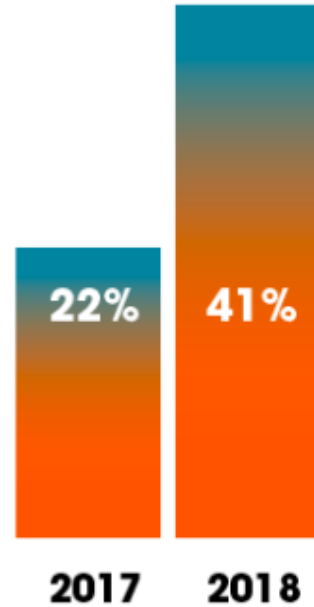
Efficiency

Collaboration and best practice.

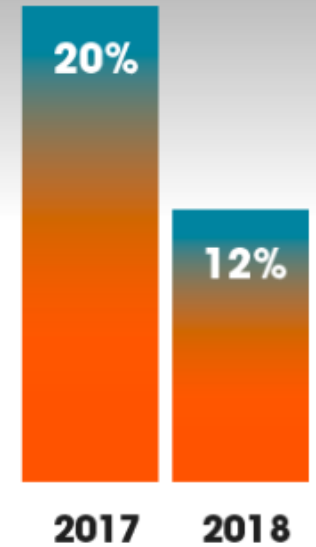
Accessibility and storage.

Beyond a Lab Notebook.

**Investment in AI
is up 21% from
last year.**



**Only 12% of executives
believe that graduates
have enough digital skills.
This is down from last year!**



Source: ignite.digital

Beyond a Lab Notebook

- Digital skills gap.
- STEM Careers.

Limitations

Cost

Accessibility

Training

Coming up...



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RSpace

Paid vs Unpaid

Highlights:

- Gallery
- Role assignment
- Apps

Overall experience:

- Interface was not user friendly.
 - No offline capacity.
 - Not suitable for education. (!)
-

Last Modified Descending



CREATE



- Imports
- Lac operon lab
 - Isolation and characterization of b
 - Day 2
 - Labeling Etiquette
 - Safety and Disposal Procedures
 - Day 1
 - Lab Manual Intro

- Templates
- Examples
- Shared

Home / Lac operon lab / Isolation and characterization of bacterial mutants constitutive for the lac operon

View

Show All Entries

← Entry 6 of 6

rozadim

Name: Isolation and characterization of bacterial mutants constitutive for the lac operon

Tags:

Unique ID: SD427661

Data

Isolation and characterization of bacterial mutants constitutive for the lac operon

Imported from Protocols.io

Metadata

Original creator: Roza Dimogkioka

Published on: Mon Jul 01 13:56:50 UTC 2019

Original authors:

Steps

Step 1

Day 1 - Dilution of cultures on BCIG agar

Inoculate, aseptically, the following 50 ml flasks with two drops of a nutrient broth culture of E. coli ML30: (a) 1.0 mM phenyl-β-galactoside / salts medium (see p. 14) And either of: (b) 1.0 mM glucose / salts medium or 0.5 mM lactose / salts medium

[CHOOSE GALLERY](#)[IMPORT](#)


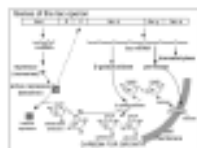

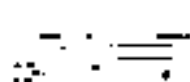

Order by ▼

 Select All

rozadim

[Go](#)[New Folder](#)[Images](#) / lac operon**Image Gallery**

Parent Folder

  Screen Shot 2019-06-21 at 11.01...  Screen Shot 2019-06-21 at 9.59.26...  lacgene2.gif

[CHOOSE GALLERY](#)[IMPORT](#)


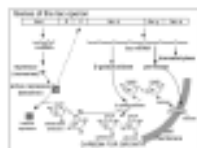

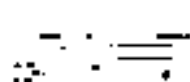

Order by ▼

 Select All

rozadim

[Go](#)[New Folder](#)[Images](#) / lac operon**Image Gallery**

Parent Folder

  Screen Shot 2019-06-21 at 11.01...  Screen Shot 2019-06-21 at 9.59.26...  lacgene2.gif

OneNote; an unexpected ELN.

Similar functions to RSpace.

User-friendly interface.

Flexible

Cost-effective

Offline capacity

< All teams



Life Sciences Electronic Lab ...

General

Private - just for important people

Test channel

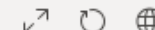


Life Sciences Electronic Lab Notebook Project > General

This team has guests

Conversations Files Class Notebook Assignments RSpace: Lac Operon Meeting Notes +

Team



OneNote

Life Sciences Electronic Lab Notebook Project Notebook - Saved

File Home Insert Draw View Help Class Notebook Open in browser

Calibri 11 **B** *I* U abc

Life Sciences Electronic Lab Notebook Project Notebook

Welcome	Welcome information
---------	---------------------

- > _Collaboration Space
- > _Content Library
- > _Teacher Only
- > Ana
- > Anna
- > Jhozef
- > Lukas
- > Roza
- > Wajjha

Welcome information

27 June 2019 11:13

General materials

- ★ [Navigation](#): How to navigate OneNote
- ★ [Best Practice](#)
- ★ [Protocols](#)
- ★ [Glossary](#)

Labs:

■ [Lac Operon Lab](#) (Web view)

[Safety and Disposal Procedures](#) (Web view)

[Labeling Etiquette](#) (Web view)




[Lab Manual Intro](#) (Web view)



[Day 1](#) (Web view): Enrichment and control culture inoculation




[Day 2](#) (Web view): Dilution of cultures on BCIG agar


← →


Home Insert Draw View **Class Notebook**






 Distribute Page  **Distribute New Section**  Copy to Content

 **Life Science**  Distribute New Section **Class Notebook** ▾


 Welcome  Distribute New Section Group 

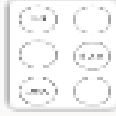
 > _Collaboration Space

 ▾ **_Content Library**

-  Best Practice
-  Glossary
-  Lac Operon Lab
-  Infectious disease
-  **Forensic investigations**

Forensic investigations

Data Calculations
Toxicology: 

Forensic Analysis
Background 

Case Study
As a scientist it is essential to...

Coming up...



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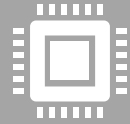


REFLECTION ON
OUR EXPERIENCE.

Microsoft Teams



Effective communication tool.



Built-in apps such as OneNote and RSpace.



Ability to chat in a group and privately.



Ability to create different groups and channels.



Life Sciences Electronic Lab ...

General

Private - just for important people

Test channel

This team has guests

Conversations

Files

Class Notebook

Assignments

RSpace: Lac Operon

Meeting Notes



abstract.docx



7/7 10:16 AM

Hi [Mary McVey](#), please find attached the abstract. I have filled the form to let Jennifer know i will be attending the Nuffield celebration event.

Abstract



8/7 3:41 PM

Hi [Mary McVey](#), please find attached the project abstract. I have also emailed Jennifer.

Project Abstract
Life Sciences Electronic Lab Notebook Project > General

← Reply

August 19, 2019



Mary McVey 8/19 1:02 PM

Dear [Roza Dimogkioka \(student\)](#) and [Lukas Visockas \(student\)](#) and [Angela Watt](#) I have a meeting in my dairy for us to meet at 2pm, are you able to make it for an online meeting then?

← Reply



Mary McVey 8/5 9:32 AM

Discussion of ELN material in Rspace and Teams

ELN discussion
Monday, August 19, 2019 @ 2:00 PM

ELN discussion ended: 3m 26s

← Reply

August 27, 2019

Start a new conversation. Type @ to mention someone.



< All teams



Life Sciences Electronic Lab ...

General

Private - just for important people

Test channel



Life Sciences Electronic Lab Notebook Project > General

This team has guests

Team

Conversations Files Class Notebook Assignments RSpace: Lac Operon Meeting Notes

Back Edit assignment Student view

Export to Excel

Return

Lac operon Pre-Lab

Due June 25, 2019 11:59 PM

Open in Forms

To grade (4) Graded (0)

Search students

<input type="checkbox"/>	Name ▲	Status ▲	Feedback
<input type="checkbox"/>	Anna Nauman	Viewed	
<input type="checkbox"/>	annanauman19	Not turned in	
<input type="checkbox"/>	sheldiajhozef21	Viewed	
<input type="checkbox"/>	wajjiamid9	Viewed	

Coming up...



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REFLECTION ON
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Some points
from our
experience.

We found ourselves taking more notes during experiments.

Data handling was more efficient.

Using electronic devices in the lab has its limitations.

We suggest that OneNote would be a more suitable ELN for undergraduate studies.



A quote from
the industry:

The digital revolution is upon us. For a company to be successful it must embrace the change, recognising that, whatever the business, being at the forefront of digitalisation is not just a competitive advantage but essential for survival.

In this context, **the skill set which employees have must now be renewed several times during a career if they are to stay a relevant and valuable resource.** The ability of an organisation to connect new technology, new ways of using data, the activities that underpin the business and **a digitally competent workforce is what facilitates the leap forward.**

Richard Miller, Aker British Petroleum

Sources:

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