20.03.23-24.03.23 Transnational meeting, Torino
Activity C4

20.03.23 Monday

18.50 Arrival from Caselle airport in Carlo Alberto square (in the city Center) where Italian students and teachers meet their Norwegian counterparts of Massimo d'Azeglio highschool.
Norwegian students leave with their Italian counterparts for home/dinner and Italian teachers accompany the Norwegian ones to the hotel.

21.03.23 Tuesday

09.00 Arrival at school and meeting in school (Language lab)
09.00-09.30 Short visit around the school.
09.35-10.30 Workgroup: presentation of the characteristics of the Italian and Norwegian school system: analogies and diffences (Auditorium) (break at 10.00-10.10).
10.30-11.00 Debate: structures and rules for a comparison of opinions (Auditorium).
11.00-12.00 Group work 1: debate about a specific topic (in Auditorium).
Group work 2: "Traditional, form of poetry" (Library).
12.00-13.00 Group work 1: "Traditional, form of poetry" (Library).
Group work 2: debate about a specific topic (Auditorium).
13.15-14.15 Student lunch.
12.00-13.30 Teacher's meeting Erasmus+ at school. At the end of the meeting, lunch for teachers.
14.50 Meeting at ticket office of Royal Palace
15.00-17.00 Visit of the Royal Palace in Turin *(tickets offer by Italian school)*
17.00 End of the day activities. Free time. Rest of the day/evening and dinner with the host family.

22.03.23 Wednesday

9.00-1300 Laboratory activity at the Molecular Biotechnology Center of the University of Turin.
Meeting at the laboratory headquarters (via Nizza 52, metro stop "Nizza")
13.00-14.00 Lunch
14.00-16.00 Conclusion of the Laboratory activity at the Molecular Biotechnology Center
16.30 End of the day activities. Free time. Rest of the day/evening and dinner with the host family.
19.30 Social activities for teachers. Mariangela and other Italian teachers meet colleagues at Roma.

23.03.23 Thursday

09.00-10.00	At school: lesson in English on a historical topic (Auditorium)
10.00-10-20	Break
10.30-11.30	Work group 1°: activity in Fab Lab
	Work group 2°: activity in Chemistry Lab
11.30-12.30	Work group 1°: activity in Chemistry Lab
	Work group 2°: activity in Fab Lab
12.30-13.30	Lunch
13.40	Meeting at bus stop 11 Porta Nuova on the via Sacchi side.
15.00	Arrival in Reggia di Venaria Reale
15.15-18.00	Visit of the Royal Residence *(tickets offer by Italian school)*
18.30	Departure from Venaria Reale
19.30	Arrive in Turin
20.00	Farewell dinner for students and teachers *(offer by Italian school)*

24.03.23 Friday

Breakfast with the host

09.00	At school (Library). Filling out a satisfaction questionnaire. Free time.
11.00	Departure for Caselle airport.

Note

1. If necessary, all Norwegian guests should buy a weekly pass Multicity (6 days) for local transport in Turin. The pass costs 74 kroner. Otherwise, they can buy one day ticket (Daily) at the cost of 30 kroner. This can be done at the GTT resales o by app TO Move.
2. Farewell dinner on 23.03.23 will be paid from project resources of Italy.
3. Students need to pay for all the refreshments and beverages that are not included in the program.

Debate

(Copyright INDIRE)

How to organize a debate

In the ancient tradition, there were discussions and rules to conform to. Nowadays we have 'debates'.

The rules of debating at D'Azeglio are almost the same as in the international debates (rules based on World School Debating Championship, with some variations due to time: there are three speakers for each group, one motion and four different replies (three replies lasting six minutes each and the last one only three).

The teams alternate in the replies and the representative of the team against the motion, speaks first. After the first minute of speech and before the sixth, the other team can ask a question. The speaker can accept or refuse to answer but he is obliged to answer at least one question during his/her speech.

The motion was, 'is it advisable to use health-warning labels for beer, wine and spirits?'

Together with the first group composed of six Italians and six Norwegians there were two classes from liceo acting as spectators.

They stayed in the assembly Hall until one p.m. and watched the two debates with the first and the second group

The sonnet and ballad
Worksheet and materials

The sonnet and the ballad
Worksheet

Groups of students have to compose a sonnet on the board using a poetry generator.
For this activity, the following steps were followed:
1. Find the definition and explanation of the sonnet using:
this link:
https://www.poetryfoundation.org/articles/70051/learning-the-sonnet
2. read the article (5 minutes)
3. Try the poem generator on
https://www.poem-generator.org.uk/?i=28vuvaqe

After the sonnet, another traditional form of poetry has been examined: the ballad.
The groups worked on interpreting and explaining the meanings of the ballads in Norwegian and Italian ("Geordie" and "Villeman and Magnhild"), and finally listened to the ballads performed by Italian and Norwegian artists.
Each group has to provide a summary of some verses of the ballads and then answer some questions:
What are the themes of these two ballads?
Referring to the Norse ballad and try to interpret it using what you know about ancient myths:
Why gold? What kind of metal is it? The presence of water is important in ballads… what does it represent?
Are there magical elements within the ballads?
What is the meaning of the harp in Nordic and Greek culture?

At the end, the different groups shared the information learned and the answers given.

READING PASSAGE 3

*You should spend about 20 minutes on **Questions 28–40** which are based on Reading Passage 3 below.*

Variations on a theme: the sonnet form in English poetry

A The form of lyric poetry known as 'the sonnet', or 'little song', was introduced into the English poetic corpus by Sir Thomas Wyatt the Elder and his contemporary Henry Howard, Earl of Surrey, during the first half of the sixteenth century. It originated, however, in Italy three centuries earlier, with the earliest examples known being those of Giacomo de Lentino, 'The Notary' in the Sicilian court of the Emperor Frederick II, dating from the third decade of the thirteenth century. The Sicilian sonneteers are relatively obscure, but the form was taken up by the two most famous poets of the Italian Renaissance, Dante and Petrarch, and indeed the latter is regarded as the master of the form.

B The Petrarchan sonnet form, the first to be introduced into English poetry, is a complex poetic structure. It comprises fourteen lines written in a rhyming metrical pattern of iambic pentameter, that is to say each line is ten syllables long, divided into five 'feet' or pairs of syllables (hence 'pentameter'), with a stress pattern where the first syllable of each foot is unstressed and the second stressed (an iambic foot). This can be seen if we look at the first line of one of Wordsworth's sonnets, 'After-Thought':

'I thought of thee my partner and my guide'.

If we break down this line into its constituent syllabic parts, we can see the five feet and the stress pattern (in this example each stressed syllable is underlined), thus:

'I thought/ of thee/ my part/ner and/ my guide'.

C The rhyme scheme for the Petrarchan sonnet is equally as rigid. The poem is generally divided into two parts, the octave (eight lines) and the sestet (six lines), which is demonstrated through rhyme rather than an actual space between each section. The octave is usually rhymed **abbaabba** with the first, fourth, fifth and eighth lines rhyming with each other, and the second, third, sixth and seventh also rhyming. The sestet is more varied: it can follow the patterns **cdecde**, **cdcdc**, or **cdedce**. Perhaps the best interpretation of this division in the Petrarchan sonnet is by Charles Gayley, who wrote: "The octave bears the burden; a doubt, a problem, a reflection, a query, an historical statement, a cry of indignation or desire, a vision of the ideal. The sestet eases the load, resolves the problem or doubt, answers the query or doubt, solaces the yearning, realizes the vision." Thus, we can see that the rhyme scheme demonstrates a twofold division in the poem, providing a structure for the development of themes and ideas.

D Early on, however, English poets began to vary and experiment with this structure. The first major development was made by Henry Howard, Earl of Surrey, altogether an indifferent poet, but was taken up and perfected by William Shakespeare, and is named after him. The Shakespearean sonnet also has fourteen lines in iambic pentameter, but rather than the division into octave and sestet, the poem is divided into four parts: three quatrains and a final rhyming couplet. Each quatrain has its own internal rhyme scheme, thus a typical Shakespearean sonnet would rhyme **abab cdcd efef gg**. Such a structure naturally allows greater flexibility for the author and it would be hard, if not impossible, to enumerate the different ways in which it has been employed, by Shakespeare and others. For example, an idea might be introduced in the first quatrain, complicated in the second, further complicated in the third, and resolved in the final couplet – indeed, the couplet is almost always used as a resolution to the poem, though often in a surprising way.

E These, then, are the two standard forms of the sonnet in English poetry, but it should be recognized that poets rarely follow rules precisely and a number of other sonnet types have been developed, playing with the structural elements. Edmund Spenser, for example, more famous for his verse epic 'The Faerie Queene', invented a variation on the Shakespearean form by interlocking the rhyme schemes between the quatrains, thus: **abab bcbc cdcd ee**, while in the twentieth century Rupert Brooke reversed his sonnet, beginning with the couplet. John Milton, the seventeenth-century poet, was unsatisfied with the fourteen-line format and wrote a number of 'Caudate' sonnets, or sonnets with the regular fourteen lines (on the Petrarchan model) with a 'coda' or 'tail' of a further six lines. A similar notion informs George Meredith's sonnet sequence 'Modern Love', where most sonnets in the cycle have sixteen lines.

F Perhaps the most radical of innovators, however, has been Gerard Manley Hopkins, who developed what he called the 'Curtal' sonnet. This form varies the length of the poem, reducing it in effect to eleven and a half lines, the rhyme scheme and the number of feet per line. Modulating the Petrarchan form, instead of two quatrains in the octave, he has two tercets rhyming **abc abc**, and in place of the sestet he has four and a half lines, with a rhyme scheme **dcbdc**. As if this is not enough, the tercets are no longer in iambic pentameter, but have six stresses instead of five, as does the final quatrain, with the exception of the last line, which has three. Many critics, however, are sceptical as to whether such a major variation can indeed be classified as a sonnet, but as verse forms and structures become freer, and poets less satisfied with convention, it is likely that even more experimental forms will out.

Questions 28–32

Reading Passage 3 has six paragraphs labelled **A–F**.

Choose the most suitable heading for each paragraph from the list of headings below.

Write the appropriate numbers ***(i–xiii)*** *in boxes 28–32 on your answer sheet.*

One of the headings has been done for you.

Note: There are more headings than paragraphs, so you will not use all of them.

List of Headings

- **i** Octave develops sestet
- **ii** The Faerie Queene and Modern Love
- **iii** The origins of the sonnet
- **iv** The Shakespearean sonnet form
- **v** The structure of the Petrarchan sonnet form
- **vi** A real sonnet?
- **vii** Rhyme scheme provides structure developing themes and ideas
- **viii** Dissatisfaction with format
- **ix** The Sicilian sonneteers
- **x** Howard v. Shakespeare
- **xi** Wordsworth's sonnet form
- **xii** Future breaks with convention
- **xiii** The sonnet form: variations and additions

Example Paragraph **A** *Answer* **iii**

28 Paragraph **B**

29 Paragraph **C**

30 Paragraph **D**

31 Paragraph **E**

32 Paragraph **F**

Questions 33–37

Using ***NO MORE THAN THREE WORDS*** *from the passage, complete the sentences below.*

33 Sir Thomas Wyatt the Elder and Henry Howard were ....

34 It was in the third decade of the thirteenth century that the .... was introduced.

35 Among poets of the Italian Renaissance .... was considered to be the better sonneteer.

36 The Petrarchan sonnet form consists of ....

37 In comparison with the octave, the rhyming scheme of the sestet is .... varied.

Questions 38–40

Choose the correct letters ***A–D*** *and write them in boxes 38–40 on your answer sheet.*

38 According to Charles Gayley,

A the octave is longer than the sestet.

B the octave develops themes and ideas.

C the sestet provides answers and solutions.

D the sestet demonstrates a twofold division.

39 The Shakespearean sonnet is

A an indifferent development.

B more developed than the Petrarchan sonnet.

C more flexible than the Petrarchan sonnet.

D enumerated in different ways.

40 According to the passage, whose sonnet types are similar?

A Spenser and Brooke

B Brooke and Milton

C Hopkins and Spenser

D Milton and Meredith

Now check your answers to Reading Passage 3.

Biochemistry
Worksheet and materials

Quick Guide for DNA PLASMID Kit

Preparing the DNA Samples

1 Place the tube containing the restriction enzyme mix 80 microliter each for workstation, labeled ENZ, on ice on the foam

We will vork on 4 workstations with 2 identical set of samples

2. each worhstation Label one of each colored microtube as follows:
green P = plasmid green
blue S1= plasmid blue
orange S2 = plasmid orange
violet S3 = Plasmid violet
red S4 = plasmid red
yellow S5 = Plasmid Yellow

3 Label the tubes with the number of workstation. Place the tubes in the foam

Pipet 10 µl of each DNA sample from the stock tubes and transfer to the corresponding colored microtubes.

Use a separate tip for each DNA sample. Make sure the sample is transferred to the bottom of the tubes.

Pipet 10 µl of enzyme mix (ENZ) into the very bottom of each tube.

Use a separate tip for each ENZ sample.

5. Cap the tubes and mix the components by gently flicking the tubes with your finger. If a microcentrifuge is available, pulse spin in the centrifuge to collect all the liq uid in the bottom of the tube. Otherwise, tap the tube on a table top.

6. Place the tubes in the floating rack and incubate 45 min at 37 °C or overnight at room temperature in a large volume of water heated to 37 °C.

7. After the incubation period, remove the tubes from the water bath and place in the refrigerator until the next laboratory.

Remove your digested DNA samples from the refrigerator.

Gel Electrophoresis

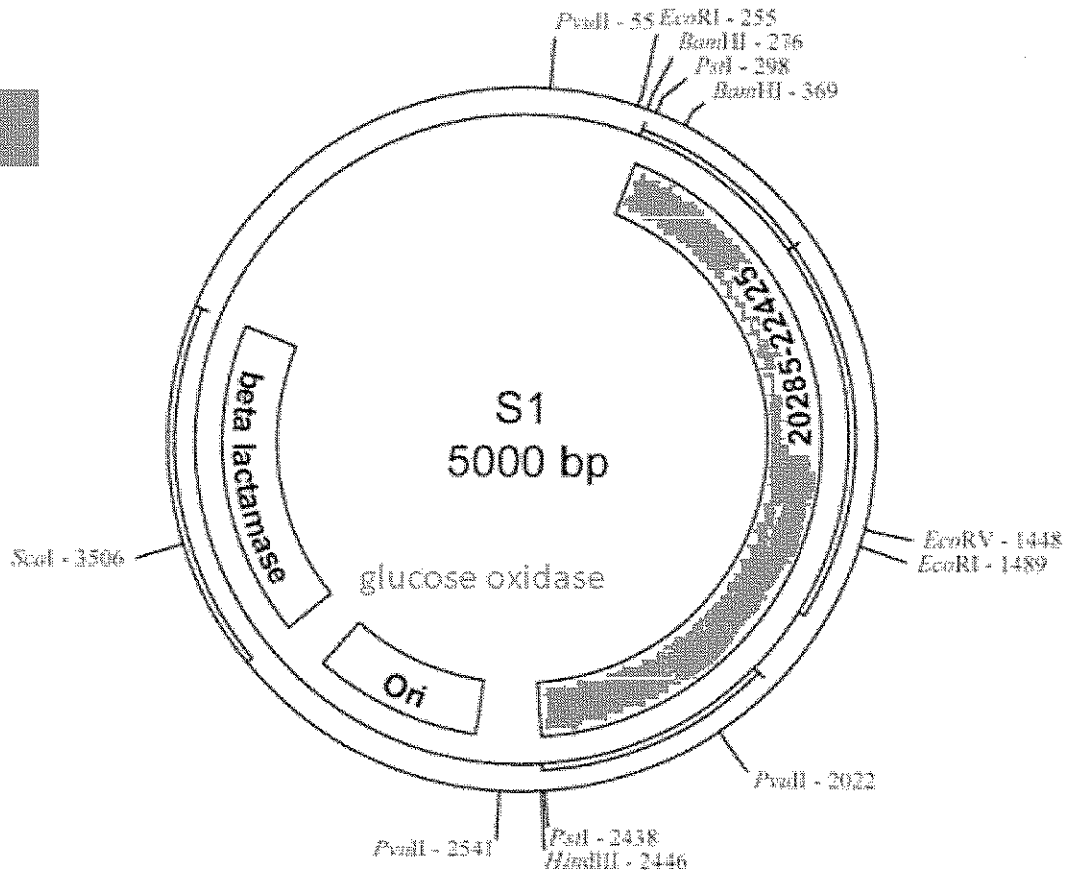
If a centrifuge is available, pulse spin the tubes in the centrifuge to bring all of the liquid into the bottom of the tube

Using a separate tip for each sample, add 5 µl of loading dye "LD" into each tube. Cap the tubes and mix by gently flicking the tube with your finger.

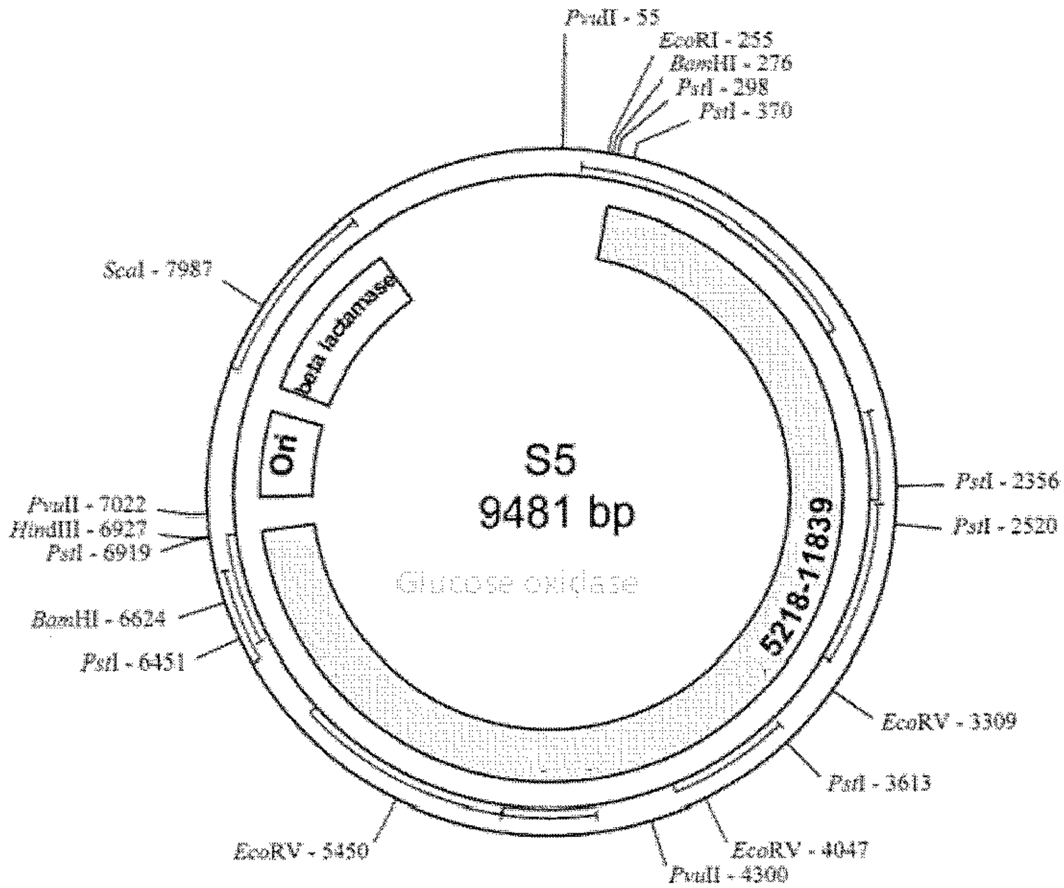
Place an agarose gel in the electrophoresis appa ratus. Fill the electrophoresis chamber with 1x TAE buffer

Using a separate tip for each sample, load the indicated volume of each sample into 7 wells of the gel in the following order:
Lane 1: M, DNA size marker, 10 µl
Lane 2: plasmid green, 20 µl
Lane 3: plasmid blue, 20 µl
Lane 4: plasmid orange, 20 µl
Lane 5: plasmid violet, 20 µl
Lane 6: plasmid red, 20 µl
Lane 7: plasmid yellow, 20 µl

Turn on the power and electrophorese your samples at 100 V for 30 minutes.


PvuII - 55
EcoRI - 255
BamHI - 276
PstI - 298
BamHI - 369
EcoRV - 1448
EcoRI - 1489
PvuII - 2022
PstI - 2438
HindIII - 2446
PvuII - 2541
ScaI - 3506
S1
5000 bp
20285-22425
glucose oxidase
beta lactamase
Ori

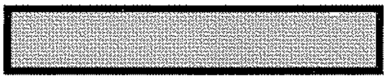
Plasmid S1

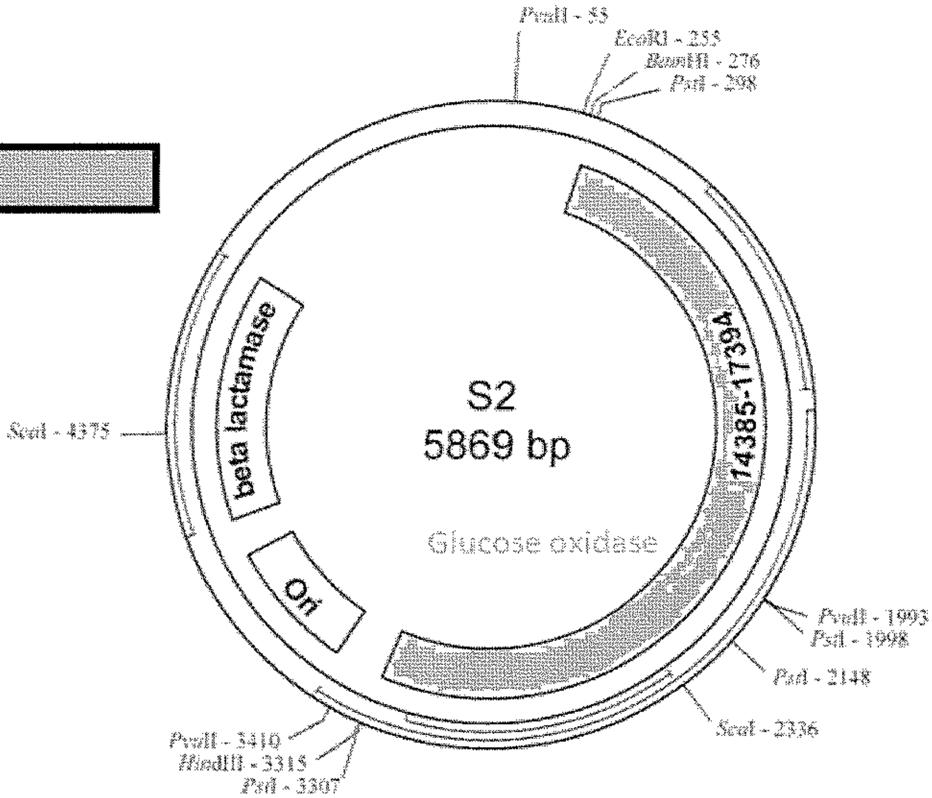

PvuII - 55
EcoRI - 255
BamHI - 276
PstI - 298
PstI - 370
ScaI - 7987
beta lactamase
Ori
S5
9481 bp
Glucose oxidase
5218-11839
PstI - 2356
PstI - 2520
PvuII - 7022
HindIII - 6927
PstI - 6919
BamHI - 6624
PstI - 6451
EcoRV - 3309
PstI - 3613
EcoRV - 4047
PvuII - 4300
EcoRV - 5450

Plasmid S5

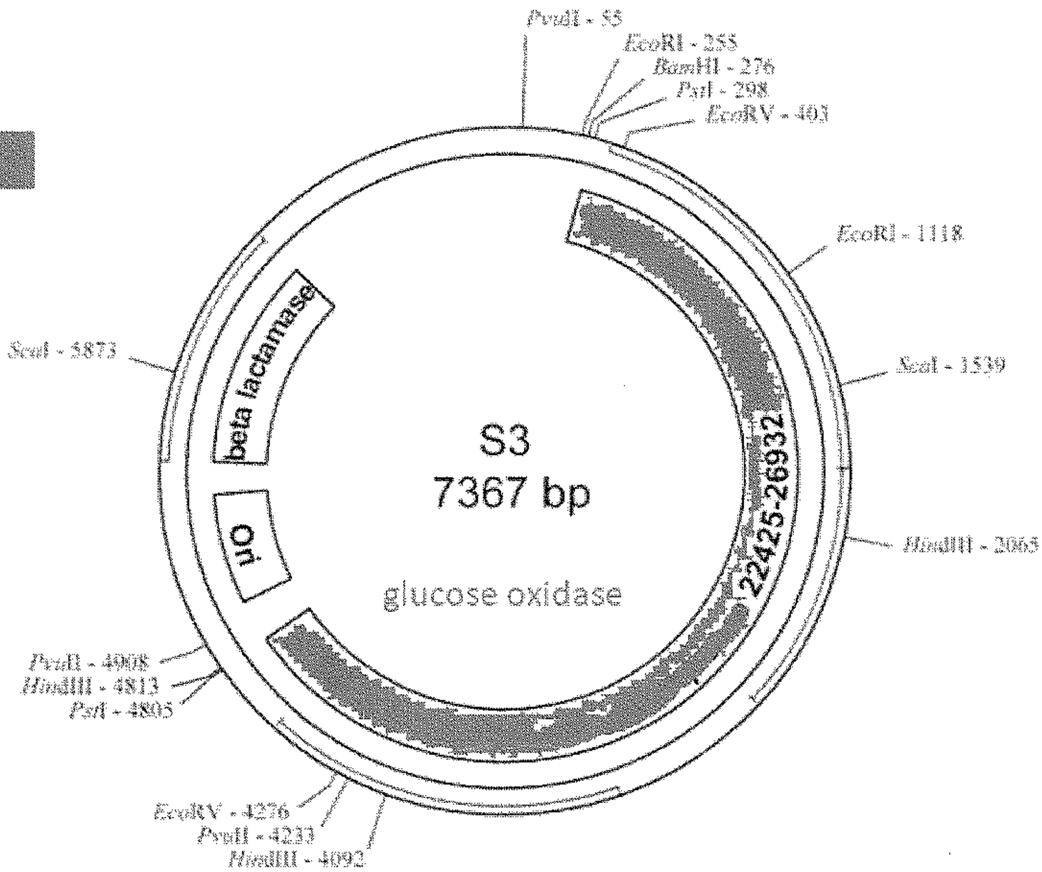
Plasmid S2 (5869 bp)			
Enzymes	**EcoRI**	**PstI**	**Both**
Fragments	5869	2860 1700 1159 150	2817 1700 1159 150 43
Total			

Sample Plasmid Maps





Plasmid S2



PvuII - 55
EcoRI - 255
BamHI - 276
PstI - 298
EcoRV - 403
EcoRI - 1118
ScaI - 1539
HindIII - 2065
HindIII - 4092
PvuII - 4233
EcoRV - 4276
PstI - 4805
HindIII - 4813
PvuII - 4908
ScaI - 5873
beta lactamase
Ori
S3
7367 bp
glucose oxidase
22425-26932

Physics

Worksheet and materials

For experience materials go to the link

https://colab.research.google.com/drive/1U895Hr5ia3ZSS1JVD5H5u0POXJ-ZcMWA

11

Calorimeter

Instruments

- Heater
- Calorimeter with thermometer
- Becker
- Two thermometers
- Balance

Theory

Heat is a form of energy that is transferred between objects with different temperatures. Heat always flows from high temperature to low temperature. The amount of heat absorbed or released Q by the object depends on its mass m, specific heat c, and the change in temperature ΔT.

Specific heat can be defined as the amount of heat required to raise the temperature of one gram of the substance by one degree Celsius.

Heat energy is either absorbed or evolved during nearly physical changes. In the laboratory, heat flow is measured in an apparatus called a calorimeter.

A calorimeter consists of two vessels, outer vessel and an inner vessel. The space between these vessels acts as a heat insulator and hence there is very little heat exchange in between the inner and outer vessels. A thermometer measures the temperature of the liquid in the inner vessel. The stirrer functions in such a way to stir the liquid to distribute the heat in the entire vessel. The fibre rings in the calorimeter helps to hold the inner vessel hanging in the center of the outer vessel. It also has an insulating cover or lid with holes for attaching the stirring rod and thermometer.

We will mix hot water with cold water. We have two processes:

- heat energy is released by the hot water Q_2
- heat energy is absorbed by the cold water Q_1

$$Q_1 = c\,m_1(T_e - T_1) \qquad Q_2 = c\,m_2(T_e - T_2)$$

where T_e is the equilibrium temperature.

Now $T_1 < T_e < T_2$, so Q_2 is negative, thus $-Q_2 = Q_1$:

$$cm_2(T_2 - T_e) = cm_1(T_e - T_1) \qquad \Rightarrow \qquad T_e = \frac{m_1T_1 + m_2T_2}{m_1 + m_2}$$

Such formula does not take into account the heat Q_c absorbed by the calorimeter. We must to calculate it in order to correct the formula and calculate the final equilibrium temperature.

The quantity of heat that raises the temperature of some substance by some amount, the same quantity of heat can simultaneously raise the same temperature of a certain mass of water assuming the specific heat of water to be 1 calorie per gram. The mass of water is then termed as water equivalent.

To calculate the water equivalent of the calorimeter m_c, we use the first part of the experience:

$$Q_c = m_c(T_a - T_1)$$

and

$$Q_1 + Q_c = Q_2 \qquad \Rightarrow \qquad m_1(T_a - T_1) + m_c(T_a - T_1) = m_2(T_2 - T_a)$$

Finally,

$$m_c = \frac{m_2(T_2 - T_a) - m_1(T_a - T_1)}{(T_a - T_1)} \qquad \Rightarrow \qquad m_c = m_2\frac{(T_2 - T_a)}{(T_a - T_1)} - m_1$$

Using such values, we are able to calculate the equlibrium temperature T_b reached in the second part of the experience:

$$T_b = \frac{m_4T_4 + (m_3 + m_c)T_3}{m_4 + m_3 + m_c}$$

Data collection

- Heat about 100 mL of water till about 100°C
- Fill the calorimeter with about 100 mL of cold water, measure this mass (m_1)
- Measure the temperature of the cold water
- Wait for water boiling (it will be 100°C temperature)
- Put the hot water in the calorimeter and measure the temperature each second till the equilibrium is reached T_a
- Measure the total hot water put in the calorimeter m_2
- Repeat it again with new masses m_3 and m_4 and new equlibrium temperature T_b

12

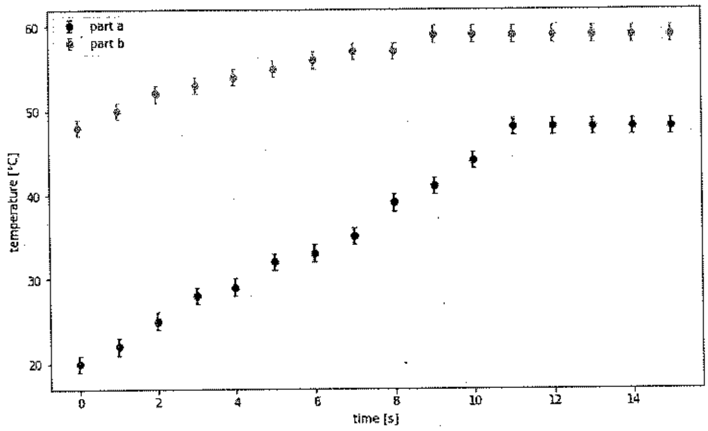
Data analysis

Plot temperature data versus time. Find the equilibrium temperature T_e. Repeat the procedure two times. The first one will be used to calculate the equivalent water mass of the calorimeter, the second one will be corrected and it will be used to verify the law.

```
import matplotlib.pyplot as plt

t_data = [0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15]
Ta_data = [20,22,25,28,29,32,33,35,39,41,44,48,48,48,48,48]
Tb_data = [48,50,52,53,54,55,56,57,57,59,59,59,59,59,59,59]

plt.figure(figsize=(10,6))
plt.errorbar(t_data,Ta_data,yerr=1,fmt='bo',capsize=2,label='part a')
plt.errorbar(t_data,Tb_data,yerr=1,fmt='ro',capsize=2,label='part b')
plt.xlabel('time [s]')
plt.ylabel('temperature [°C]')
plt.legend()
plt.show()
```



Let's calculate the equivalent water mass of the calorimeter.

```
#values to be changed
T1 = 20
Ta = 53
m1 = 104
m2 = 87

#do not change next values
T2 = 100
Taa = (T1*m1+T2*m2)/(m1+m2)                    #expected, not corrected
print("Expected Ta =",Taa,"°C")
print("Measured Ta =",Ta,"°C")
mc = m2*(T2-Ta)/(Ta-T1)-m1
print("Water equivalent mc =",mc,"g")
```

```
Expected Ta = 56.43979057591623 °C
Measured Ta = 53 °C
Water equivalent mc = 19.909090909090907 g
```

Now we use m_c to calculate the equilibrium temperature:

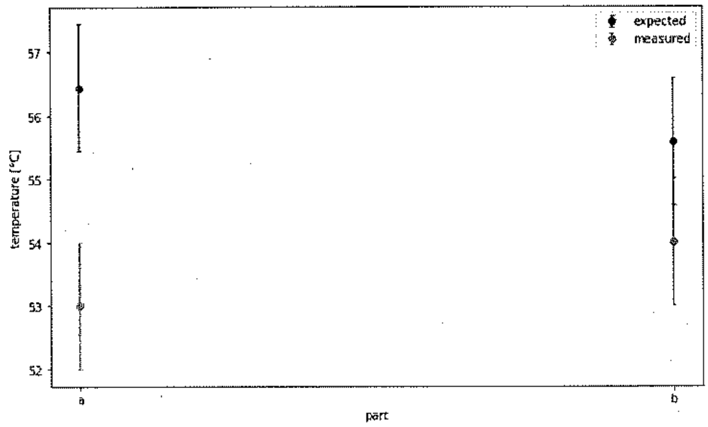
```
#values to be changed
T3 = 18
Tb = 54
m3 = 103
m4 = 104

#do not change next values
T4 = 100
Tbbb = (T4*m4+m3*T3)/(m4+m3)                   #expected, not corrected, not used
Tbb = (T4*m4+(m3+mc)*T3)/(m4+m3+mc)            #expected, corrected
print("Expected (not corrected) Tb =",Tbbb,"°C")
print("Expected Tb =",Tbb,"°C")
print("Measured Tb =",Tb,"°C")
```

```
Expected (not corrected) Tb = 59.19806763285024 °C
Expected Tb = 55.583333333333336 °C
Measured Tb = 54 °C
```

Let's plot the expected and measured values

```
Texpected=[Taa,Tbb]
Tmeasured=[Ta,Tb]
n=["a","b"]
plt.figure(figsize=(10,6))
plt.errorbar(n,Texpected,yerr=1,fmt='bo',capsize=2,label='expected')
plt.errorbar(n,Tmeasured,yerr=1,fmt='ro',capsize=2,label='measured')
plt.xlabel('part')
plt.ylabel('temperature [°C]')
plt.legend()
plt.show()
```



Conclusions

Write here your conclusions about the experiment.

Report about
"Wine and climate changes"

WINE AND CLIMATE CHANGES

Erasmus+ 2021-2223