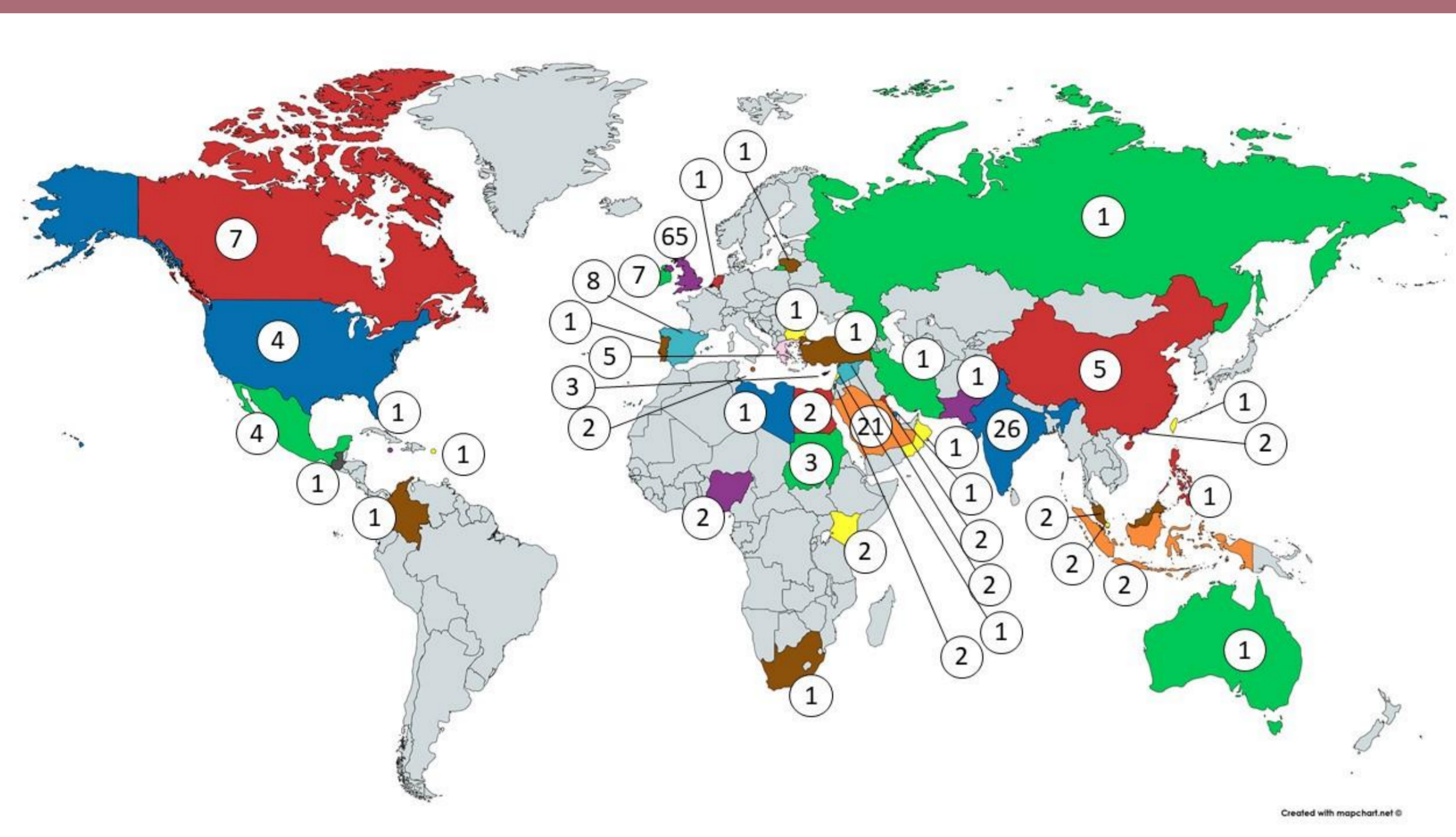


# 'Levelling up' – a pre-master's revision course

Gerhard H.W. May, School of Medicine, Dentistry and Nursing



University of Glasgow



## Countries of origin

... of MSc Medical Genetics and Genomics students since 2015

## Background

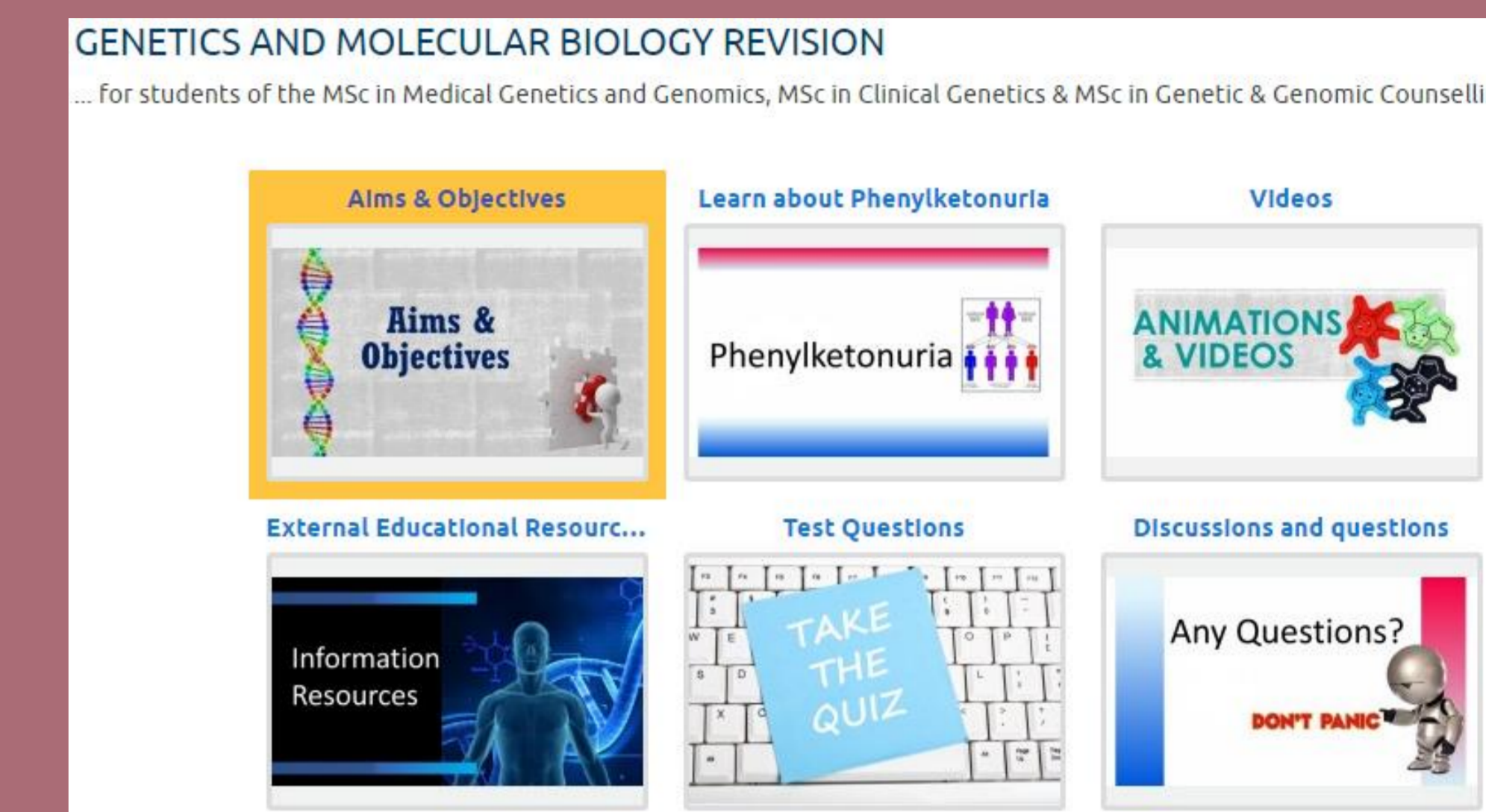
The MSc in Medical Genetics and Genomics and sister programmes attract a diverse cohort of students including not only home and EU, but also a significant number of international students. These students arrive in Glasgow with variable, often unpredictable, background knowledge in basic molecular biology. Consequently, in previous years some of our students struggled with more advanced molecular concepts. This frequently only became clear after the first assignments of the class were graded. However, at that point it was often too late to intervene. Therefore, we believe that some students didn't reach the potential they could have with a better foundation.

## Our solution

A revision Moodle course consisting of one Moodle lesson, videos and quizzes

A basic molecular biology test

Additional tutorials as required



## Timeline

4 weeks before semester starts

Week 1

Week 2

Week 3

Week 4

Revision Moodle is made available to all registered students  
Students are informed about the process

**Molecular biology**

<b>Genes &amp; DNA</b>	<b>Gene expression</b>	<b>Mutations</b>	<b>Genetics</b>
Nucleic acids	Overview	Types of mutation	Mitosis & meiosis
Quiz	Quiz	Quiz	Quiz
Nucleotides	Transcription		Genes in pedigrees
Replication	Quiz		Quiz
Quiz	RNA		
Chromosomes	Quiz		
Quiz	RNA processing		
	Quiz		
	Genetic code		
	Quiz		
	Translation		
	Quiz		

Moodle content

**Genetic Disease – Molecular Biology basics assessment**  
27/09/2019

Enter your student ID here: \_\_\_\_\_

You have 40 minutes to answer the following questions. Please circle the letter(s) of the correct answer(s) like this:

In which year was William Shakespeare born?

a. 1561  
b. 1562  
c. 1563  
d. 1564  
e. 1565

1. In meiosis I... (choose one)  
a. ...two genetically identical cells are generated.  
b. ...sister chromatids are separated.  
c. ...DNA replication is completed during prophase.  
d. ...crossing over (recombination) occurs during prophase.  
e. ...four genetically identical cells are generated and sister chromatids are separated.

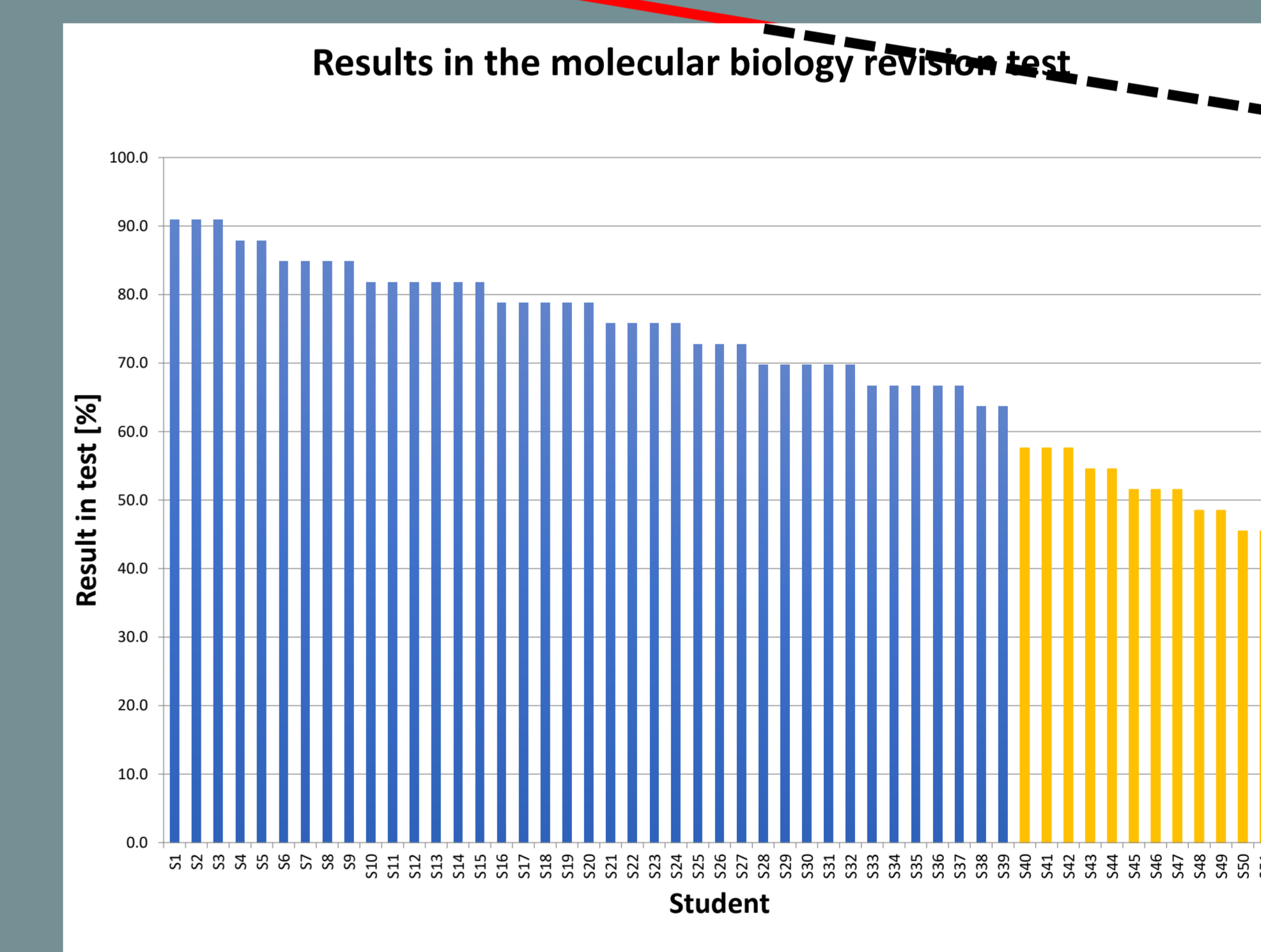
2. In mitosis... (choose one)  
a. ...the chromosome number in the resulting cells is halved.  
b. ...DNA replication is completed during prophase.  
c. ...crossing over (recombination) occurs during telophase.  
d. ...two genetically identical daughter cells are formed.  
e. ...two successive divisions occur as part of the process.

3. Comparing DNA with RNA, which ONE of the following is correct?  
a. ... RNA contains thymine as a base whereas DNA contains uracil instead.

Test example

Test of basic molecular biology knowledge

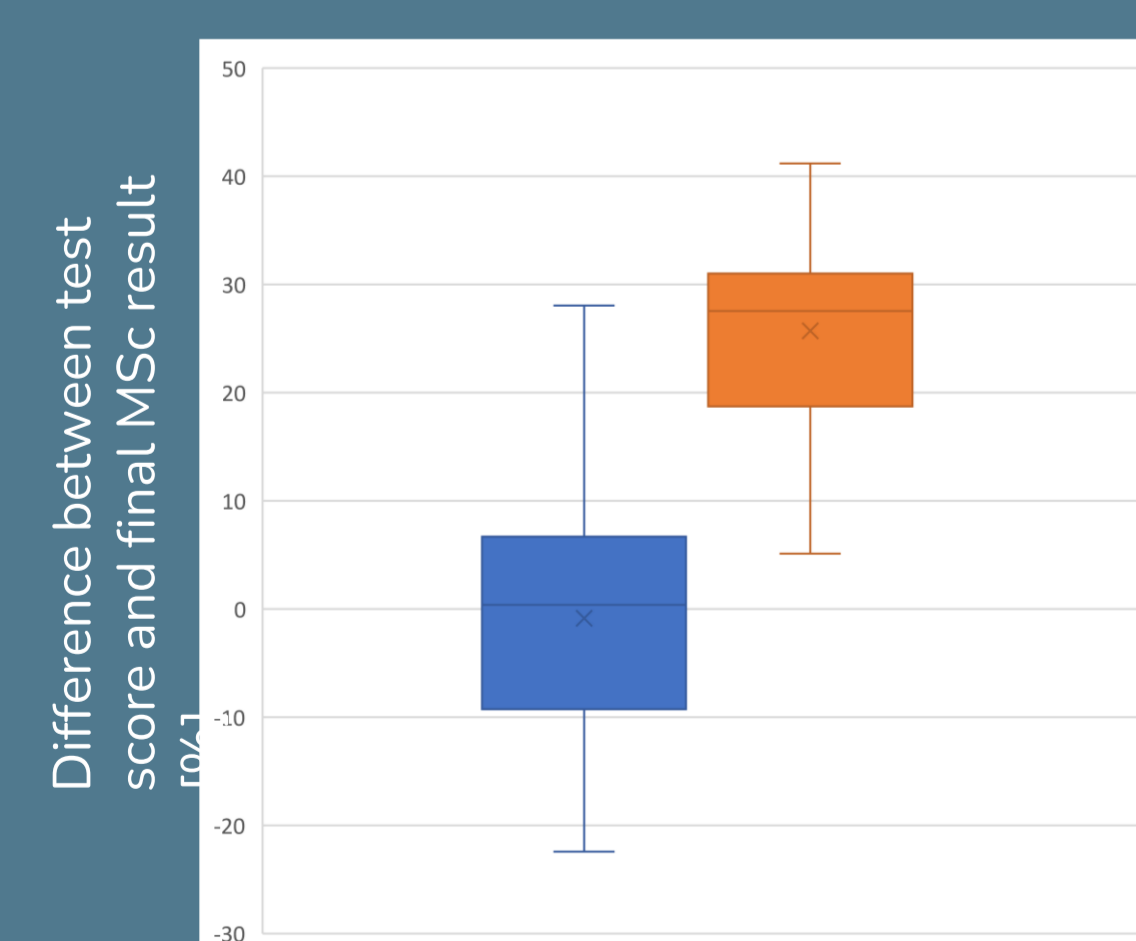
Results of test are published  
Selected students are invited to additional tutorials



Student results

Students in orange were invited to additional tutorials

## Does attending tutorials help?

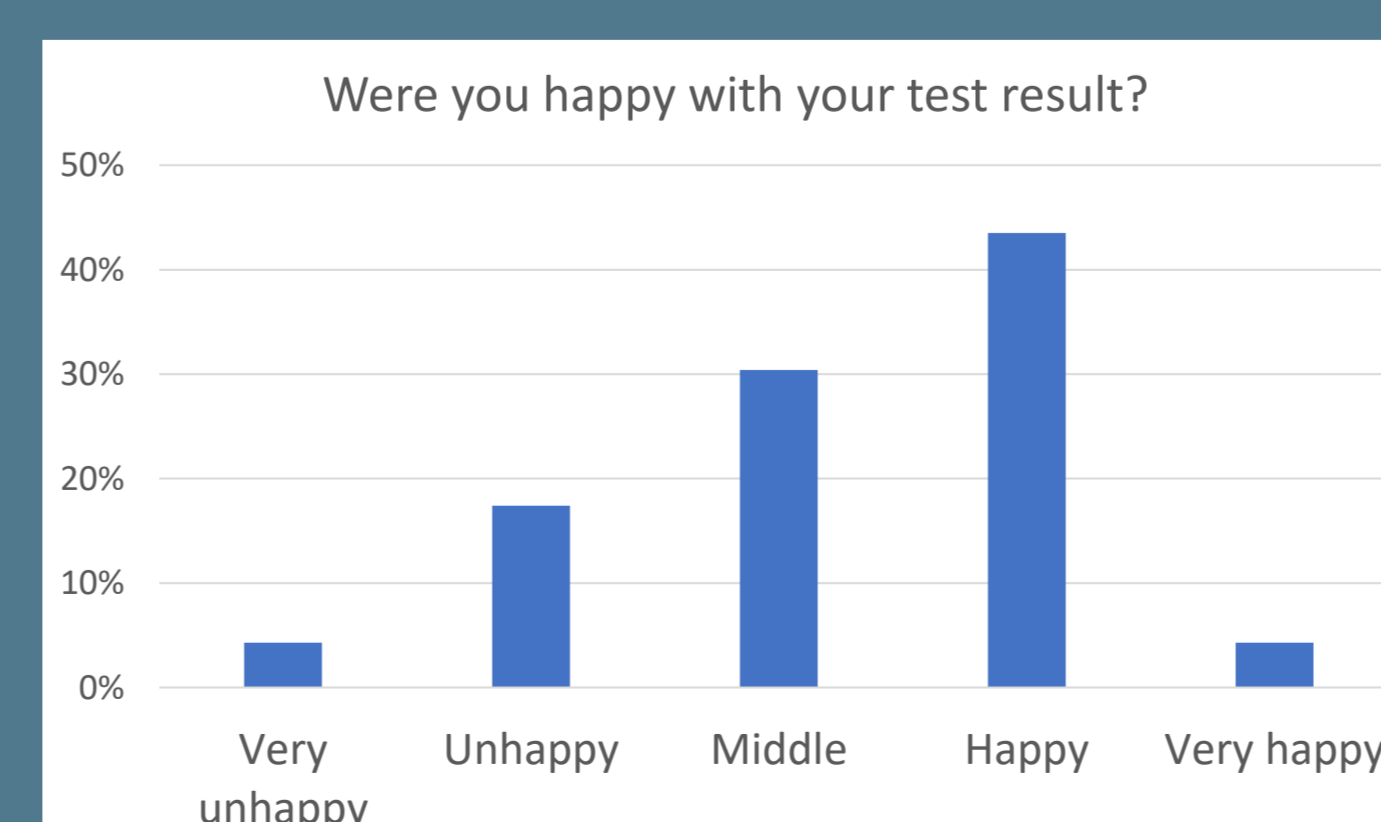
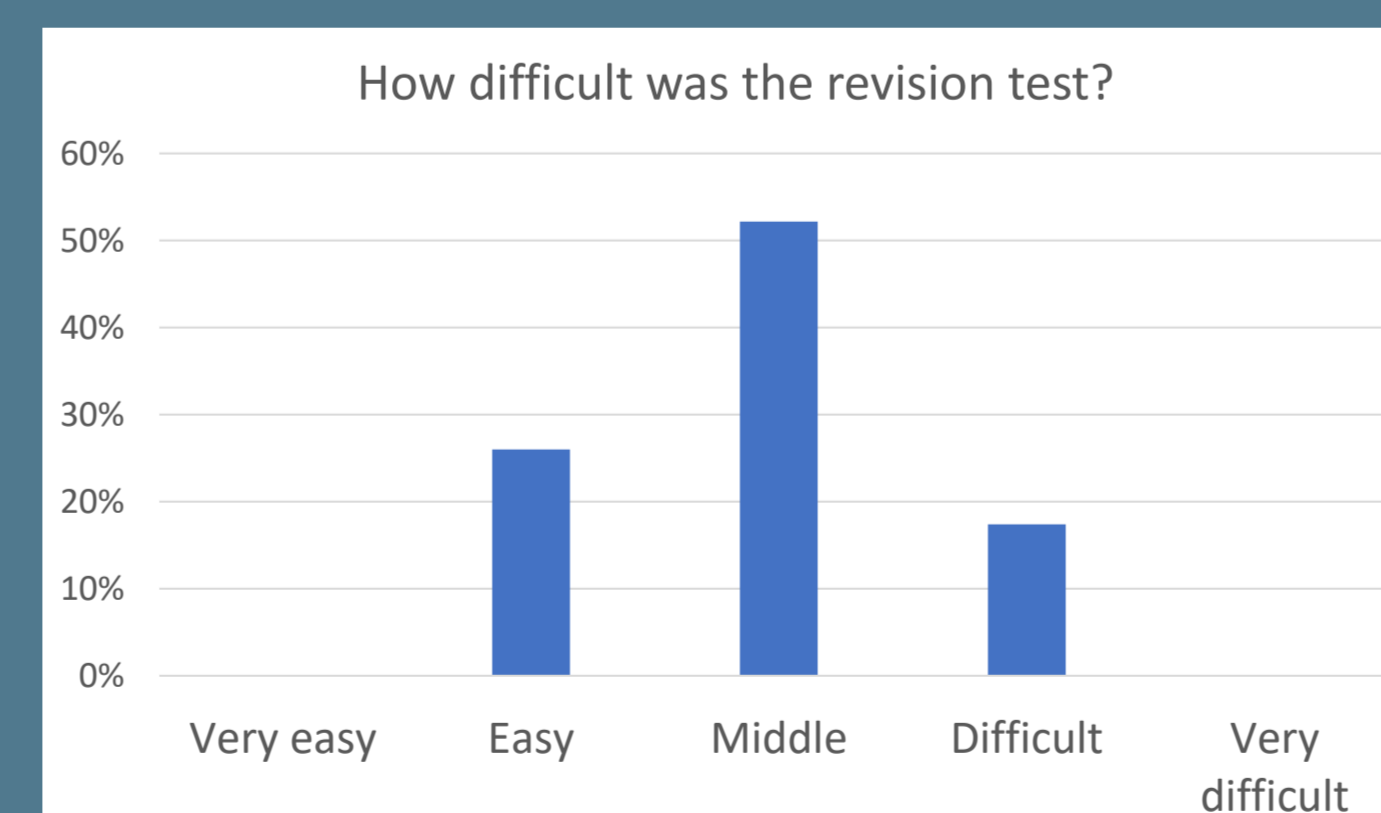


Students who attended revision tutorials at the beginning of the programme appear to have improved more, when comparing their initial test result with their final MSc result.

## Questionnaire – results

Students were given a questionnaire after the last optional tutorial. Of those responding, 100 % had accessed the revision Moodle. Of those:

Worked through the whole lesson	78%
Liked the lesson	74%
Thought lesson was at the right level	65%
Heard it all before	9%
Learned something new	52%
Lesson was a reminder	74%



## Students' views

It was good at helping refresh ideas from my degree and remind me of the basics.

Tutorials, in my opinion, could be longer.

Very informative and useful. Definitely needed it.

Helps brush up the basic concepts in an engaging way.

Good mix of different media involving text, images and videos. Sets out a baseline as with regards what kind of knowledge the student is expected to know. Allows for self-assessment by quizzes.

I like that the tutorials have a smaller number of student attending which helps me interact more and ask more questions.

It was good for me to revise things I learned in undergrad before I start my postgrad.

I found it just fine. Not much to improve there.