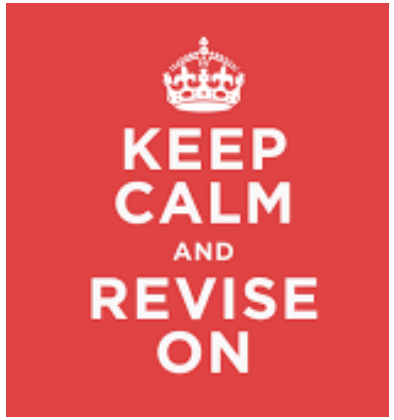
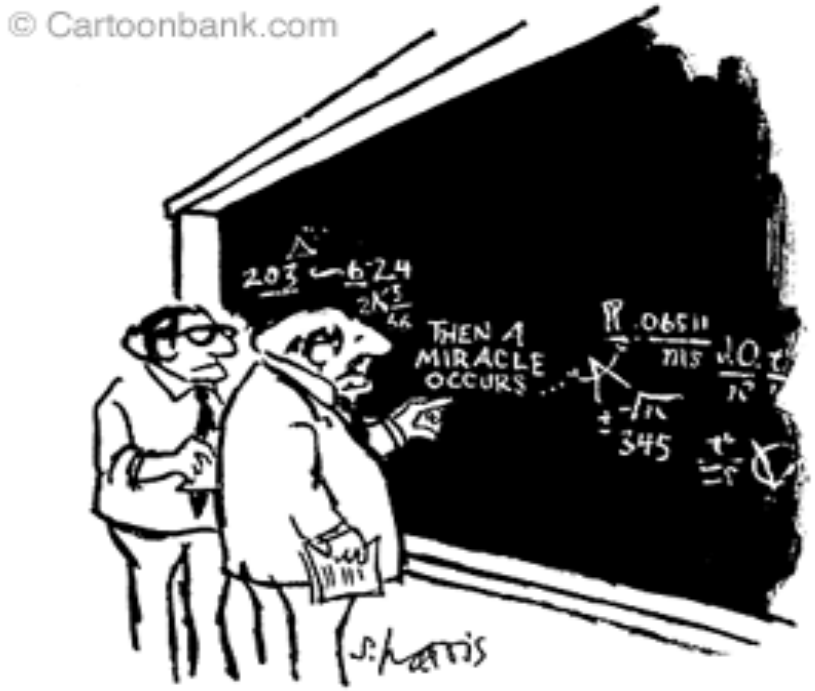
Preparing for assessment

UCIL20882/92



Intended Learning Outcomes:
Students taking this unit will be able to

- Describe and evaluate the basic science underpinning current topical issues in the biological sciences
- Debate and defend informed opinions about current biology issues including their impact on society
- Work collaboratively in an interdisciplinary team to investigate and present an aspect of bioscience research



Topics 1 and 2
DNA
Development & Stem Cells

Dr Maggy Fostier
Senior lecturer (Genetics)
Maggy.Fostier@manchester.ac.uk

DNA – some basics

Beyond the Human Genome Project

How the fertilised egg becomes a fully formed adult body

Stem cells and what are their potential therapeutic uses

"What are the differences between embryonic and adult stem cells?"

"What stem cell therapies are showing clinical promise?"

Topic 3

Precision Medicine

Dr Susan Cochran

Susan.cochran@manchester.ac.uk

Senior Lecturer (Pharmacology)

Introduction to the concept and controversies

Tailoring drug treatments for individuals

New technologies and platforms

"Why do some patients respond better than others to the same treatments?"

"What diseases/conditions are best targets for such new approaches?"

Topic 4 Microbes and Infectious Disease

Dr Ruth Grady

Ruth.grady@manchester.ac.uk

Senior Lecturer (Microbiology)

What issues are the most pressing for clinical microbiologists today?

- Superbugs (MRSA), antibiotic resistance and the rise of sexually-transmitted diseases
- Discussion based on a paper: gut bacteria and faecal transplants

"Why are we running out of antibiotics?"

"Are faecal transplants the future?"

Topic 5 The Human Brain

Dr Bipasha Choudhury
Bipasha.Choudhury@manchester.ac.uk
Reader (Anatomical Sciences)

Anatomy of the brain?
Common neurological disorders – Alzheimer's/Parkinson's
Discussion: neurological disorders

"How do nerves work?"
"What happens in brain disorders?"

Topic 6 Conservation Biology

Dr Thomas Nuhse

Thomas.nuhse@manchester.ac.uk

Senior Lecturer (Plant Sciences)

What is biodiversity, can we protect it and why should we care?

“Should we worry about ‘alien’ species?”

“Why is biodiversity important?”

“What damage are non-native species causing?”

How will this course be assessed?

10 credit UCIL20882

20 %: group video activity

40 %: 2 x individual coursework exercises

40 %: final online written examination (SAQs)

20 credit UCIL20892

10 %: group video activity

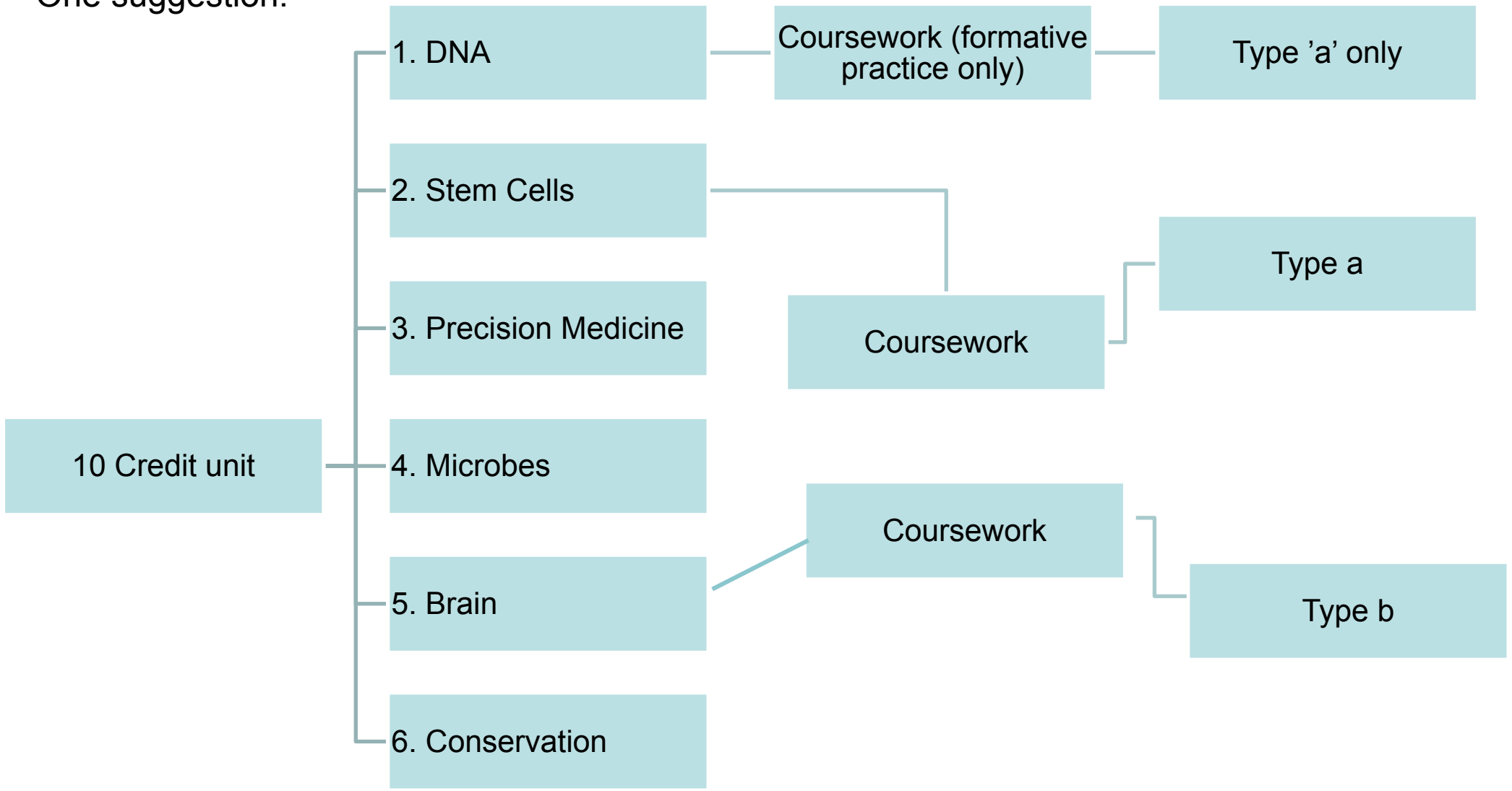
70 %: 4 x individual coursework exercises

20 %: final online written examination (SAQs)

Submission deadline Week 11
Thursday May 2nd by 4 pm
Submitted & marked via
Turnitin on Blackboard

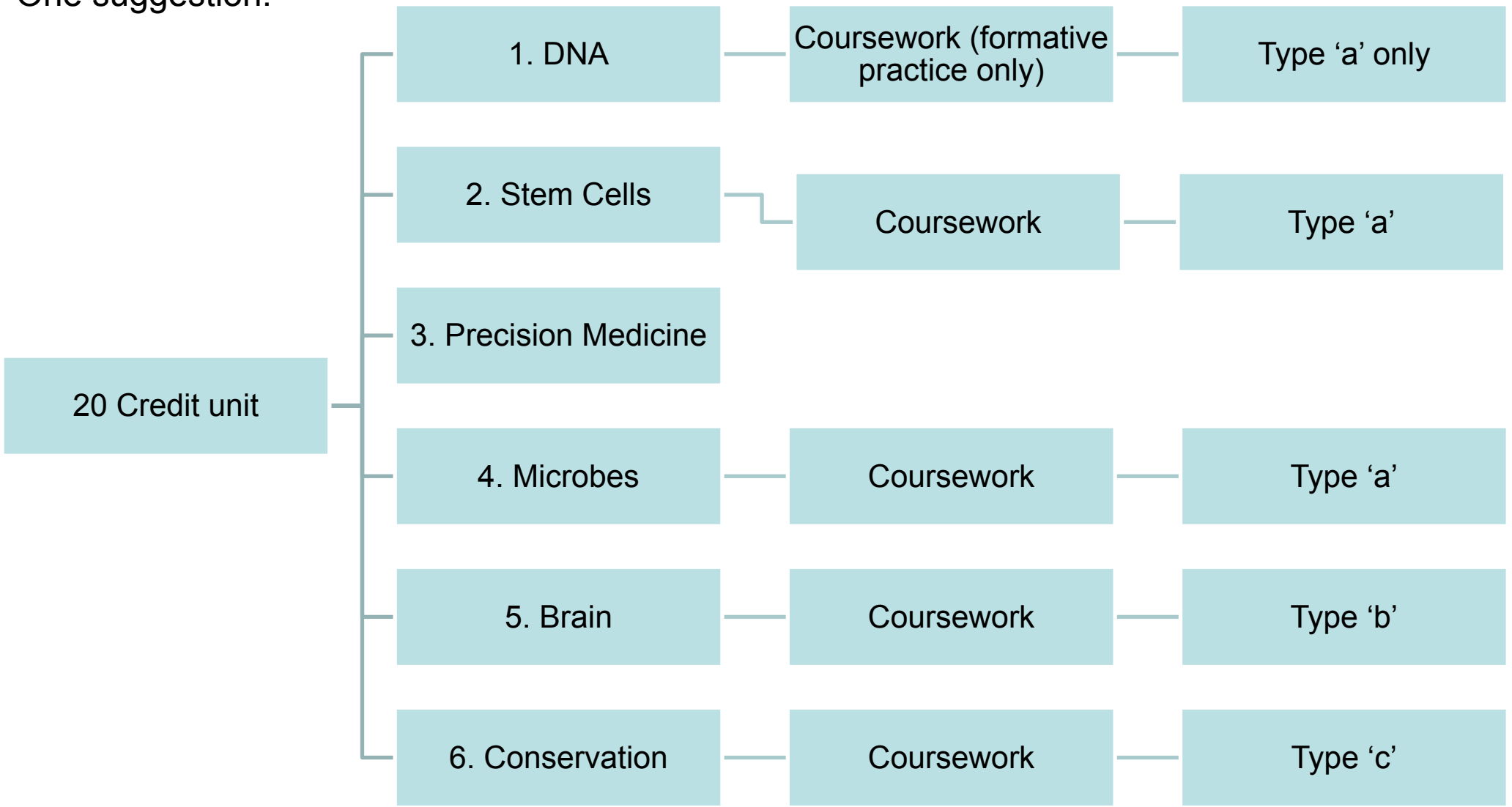
DASS extensions apply

One suggestion:



Choose 2 out of 5 topics for the coursework; can only submit either type 2 x 'a' OR 1 x type 'a' and 1 x type 'b'

One suggestion:



Choose 4 out of 5 topics to complete the coursework; can only submit 1 of type ‘b’ and 1 of type ‘c’; can all be type ‘a’ if you prefer

Marking Scheme (/30)

Criteria: Lay/Science summaries (/10):

- Communication of science
- Use of language
- Length

Criteria: Accompanying references (/20):

- Quality of chosen references (from last 5 years)
- Applicability to topic
- Correct citation
- Summary of research papers (in your own words)
- Use of English

Marking scheme (b)

All criteria marked equally /30

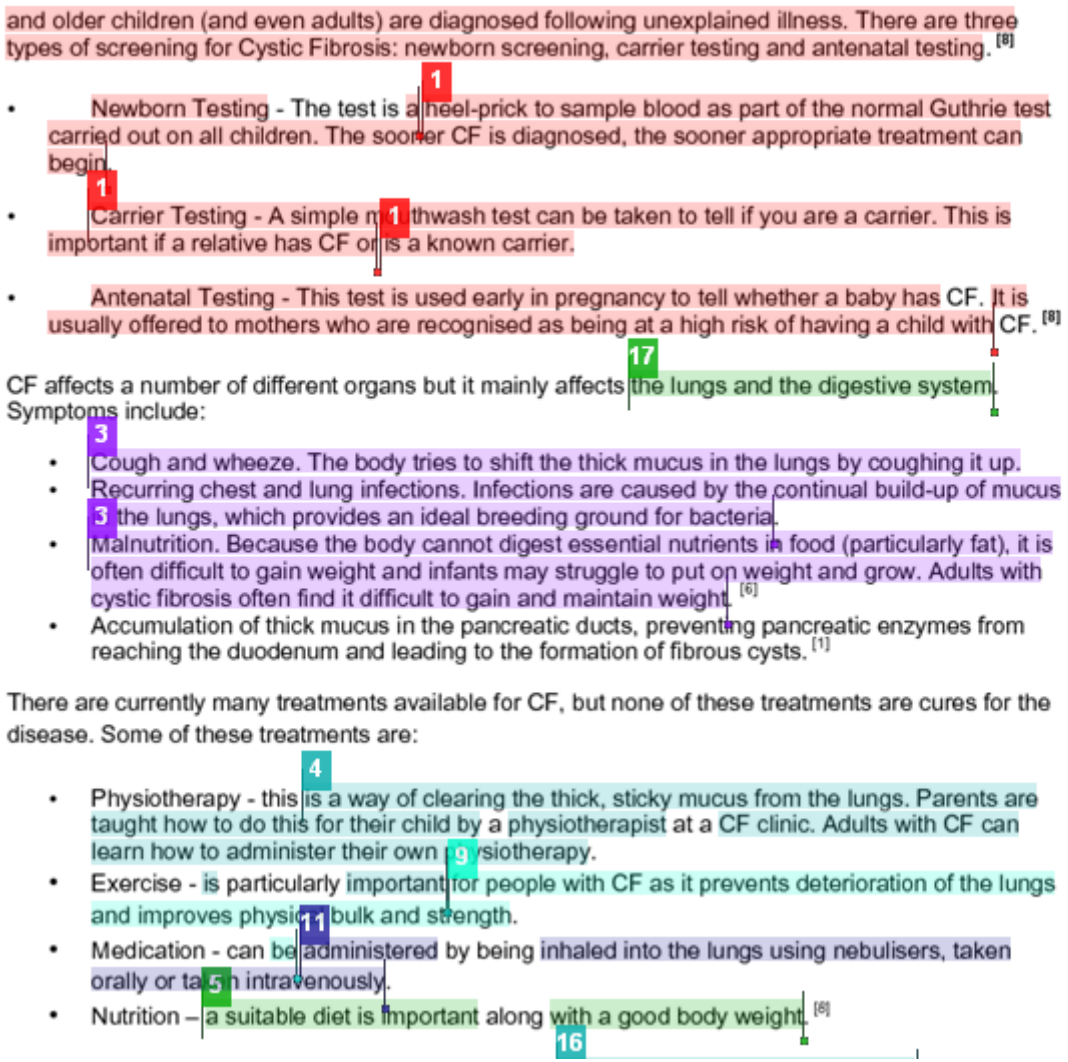
- Description of degree undertaken
- Description of intersection with bioscience topic
- Strength of argument
- Range of chosen references
- Correct citation of references
- Overall length
- Use of English

Marking scheme (c)

All criteria marked equally /30

- Lay description of concept
- Description of difficulty
- Description of learning tool: analogy/presentation/ mnemonic
- Usefulness of output
- Technical description of concept
- Use of English

‘Turnitin’- Plagiarism detection



and older children (and even adults) are diagnosed following unexplained illness. There are three types of screening for Cystic Fibrosis: newborn screening, carrier testing and antenatal testing. [8]

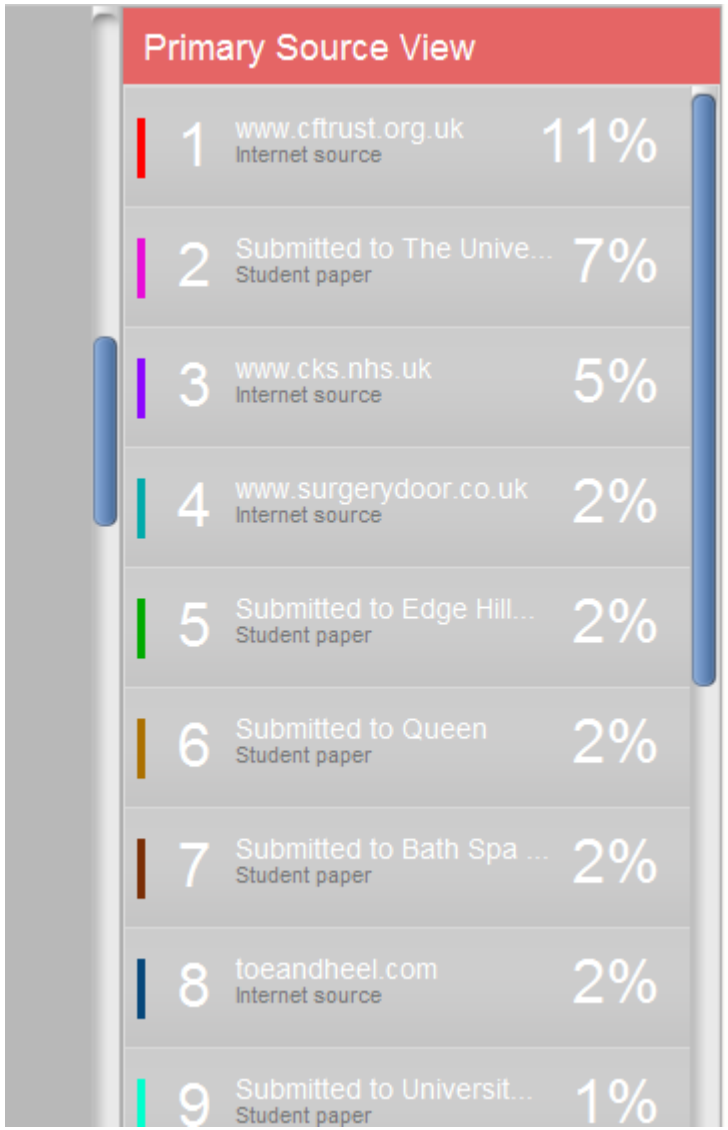
- Newborn Testing - The test is a heel-prick to sample blood as part of the normal Guthrie test carried out on all children. The sooner CF is diagnosed, the sooner appropriate treatment can begin.
- Carrier Testing - A simple mouthwash test can be taken to tell if you are a carrier. This is important if a relative has CF or is a known carrier.
- Antenatal Testing - This test is used early in pregnancy to tell whether a baby has CF. It is usually offered to mothers who are recognised as being at a high risk of having a child with CF. [8]

CF affects a number of different organs but it mainly affects the lungs and the digestive system. Symptoms include:

- Cough and wheeze. The body tries to shift the thick mucus in the lungs by coughing it up.
- Recurring chest and lung infections. Infections are caused by the continual build-up of mucus in the lungs, which provides an ideal breeding ground for bacteria.
- Malnutrition. Because the body cannot digest essential nutrients in food (particularly fat), it is often difficult to gain weight and infants may struggle to put on weight and grow. Adults with cystic fibrosis often find it difficult to gain and maintain weight. [6]
- Accumulation of thick mucus in the pancreatic ducts, preventing pancreatic enzymes from reaching the duodenum and leading to the formation of fibrous cysts. [1]

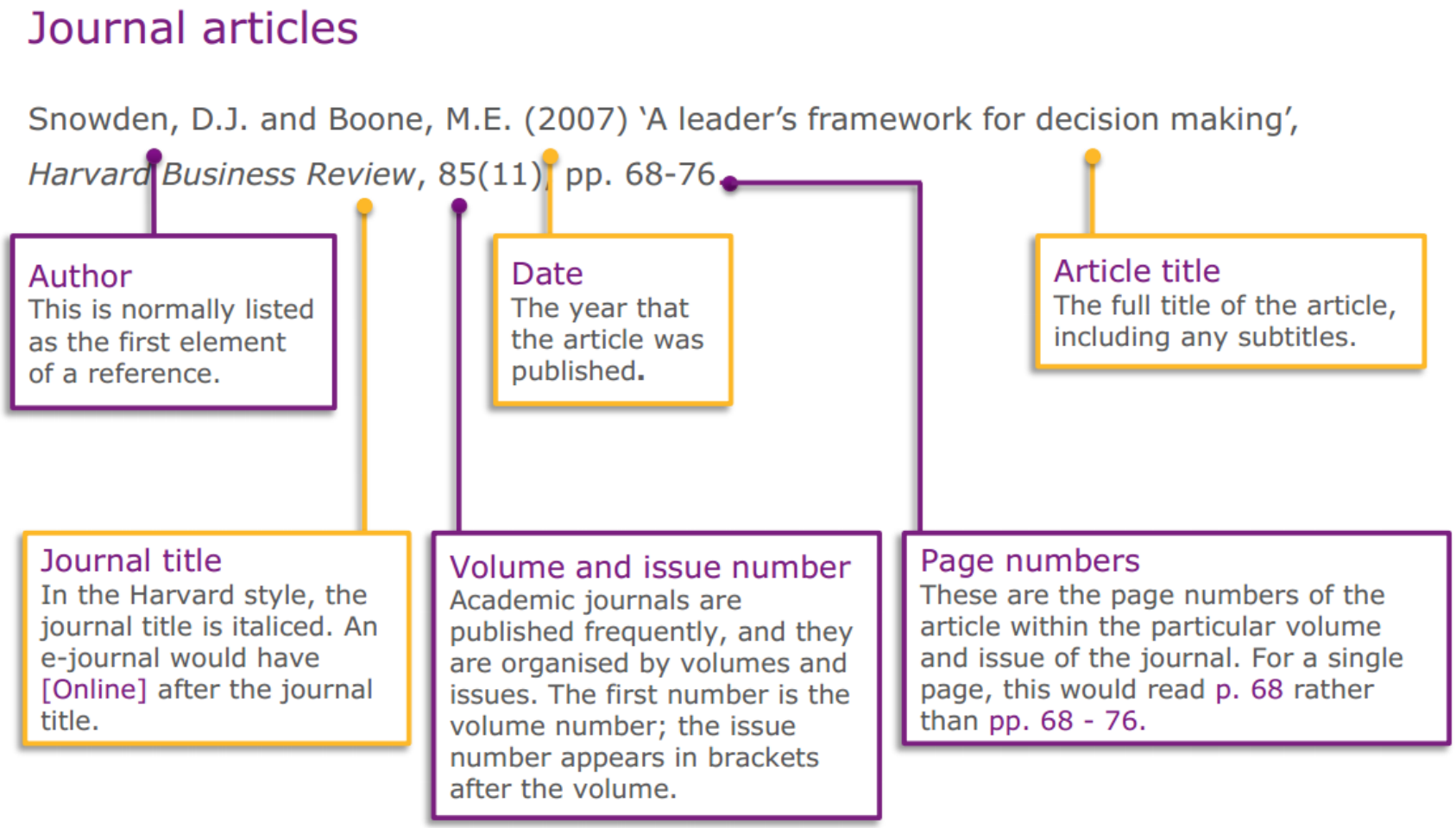
There are currently many treatments available for CF, but none of these treatments are cures for the disease. Some of these treatments are:

- Physiotherapy - this is a way of clearing the thick, sticky mucus from the lungs. Parents are taught how to do this for their child by a physiotherapist at a CF clinic. Adults with CF can learn how to administer their own physiotherapy.
- Exercise - is particularly important for people with CF as it prevents deterioration of the lungs and improves physical bulk and strength.
- Medication - can be administered by being inhaled into the lungs using nebulisers, taken orally or taken intravenously.
- Nutrition – a suitable diet is important along with a good body weight. [6]



Citing science references

Refer to: My Learning Essentials guide to referencing



Examination in May

- Online; 60 min (in the computer cluster on campus)
- 6 SAQS (short-answer questions) submitted on Blackboard
- 1 from each topic
- Example questions (and answers) will be available on Blackboard during the semester
- No past paper as content changes & reformatted course
- Bring student University ID card

Blackboard text editor

Blackboard Text Editor Icons Explained

Information:

The Text Editor appears in many Blackboard tools, such as Item, describe the location and function of the icons.

1. Content Information

Name

Colour of Name Black

Text

Paragraph Arial 3 (12

Mashups

Path: p

The text editor with expanded rows

The Text Editor Buttons

Top Row

The top row is used to format the text. It can be described as six blocks of tools reading from left to right.

1. bold, italic, underline, strike through
2. font style, type, size
3. bulleted and numbered lists
4. font colour, highlight colour
5. remove formatting
6. preview, help, View in Full Screen, hide/show rows

Central Row

1. cut, copy, paste
2. find
3. undo, redo
4. text alignment

Have a go at marking!

Novel infectious agents are still being discovered. However, it is more likely that new diseases are simply 'emerging or re-merging' old infections. Give 3 diverse examples of how this may have occurred in recent history, including a named example of the disease/infectious agent [5 marks]

6 student answers: how would you allocate marks?

Model answer:

1) an old disease that has been known about for a while but it is now known to have a microbiological cause eg stomach ulcers (Helicobacter pylori) or cancer (HPV)
2) A recognised infection spreading to new populations due to climate change eg malaria or dengue fever in Northern Europe
3) An old infection (re-)emerging because it has become resistant to treatment e.g. XDR-TB (extensively drug-resistant TB) or MRSA
4) Diseases thought to have been eradicated but now re-emerged due to changes in social mores eg. Syphilis or Chlamydia
5) A new infection resulting from changes in existing micro-organisms e.g. Bird/swine flu where the RNA virus can re-assort with other viruses (antigenic shift) or
6) anything else plausible!

Marking scheme:

5/5 (Excellent/first-class) a full and complete answer will give 3 of the above, including named examples. Answer written in such a way as to be easily understandable and decipherable!
4/5: (Good answer): as above but missing perhaps missing/ incorrect one piece of relevant information; or not explained well: too brief
3/5: (OK Answer): at least 2 relevant reasons given (with examples) or 3 reasons given but no named examples
2/5: (Weak answer/pass level) but showing some knowledge eg 2 relevant reasons but lacking full examples or 1 reason and example but explained well
1/5: (Poor answer) at least 1 relevant fact
0/5: no answer returned or wrong

If *you* had to set exam questions…

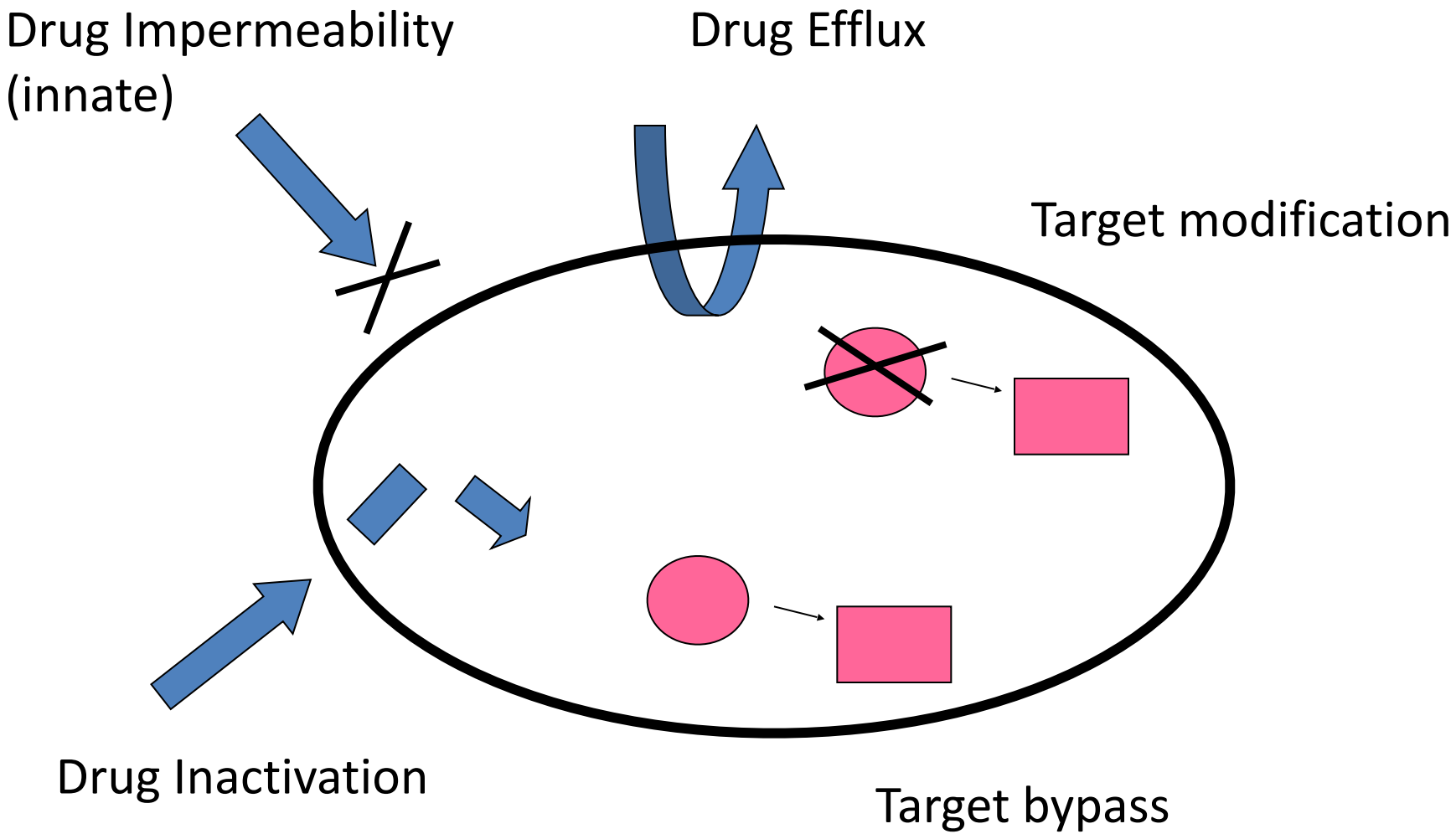
Look at the following slides:

Write 1 SAQ from this information

Tips: SAQs: explain XXX; How does XXX do XXX; What is the trend of XXXX

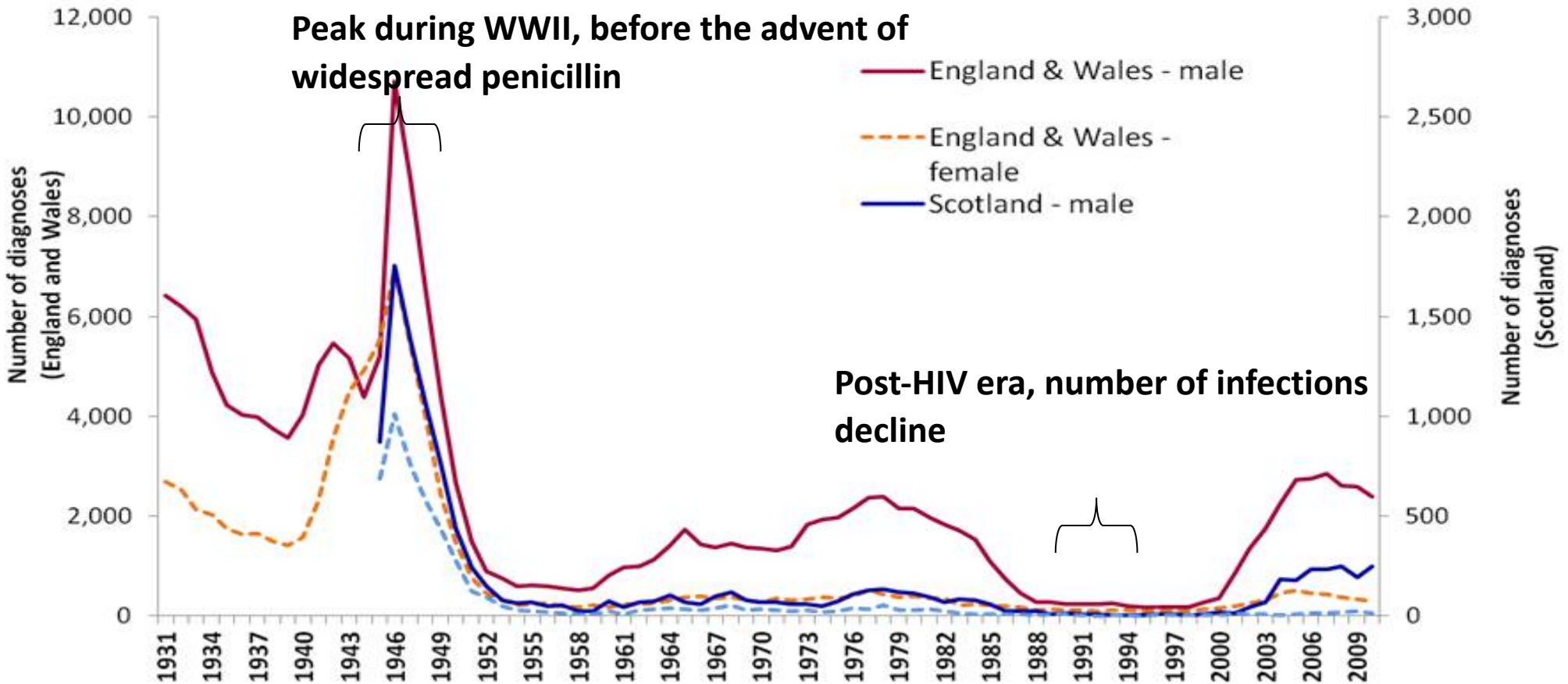
ChatGPT anyone?

Mechanisms of resistance



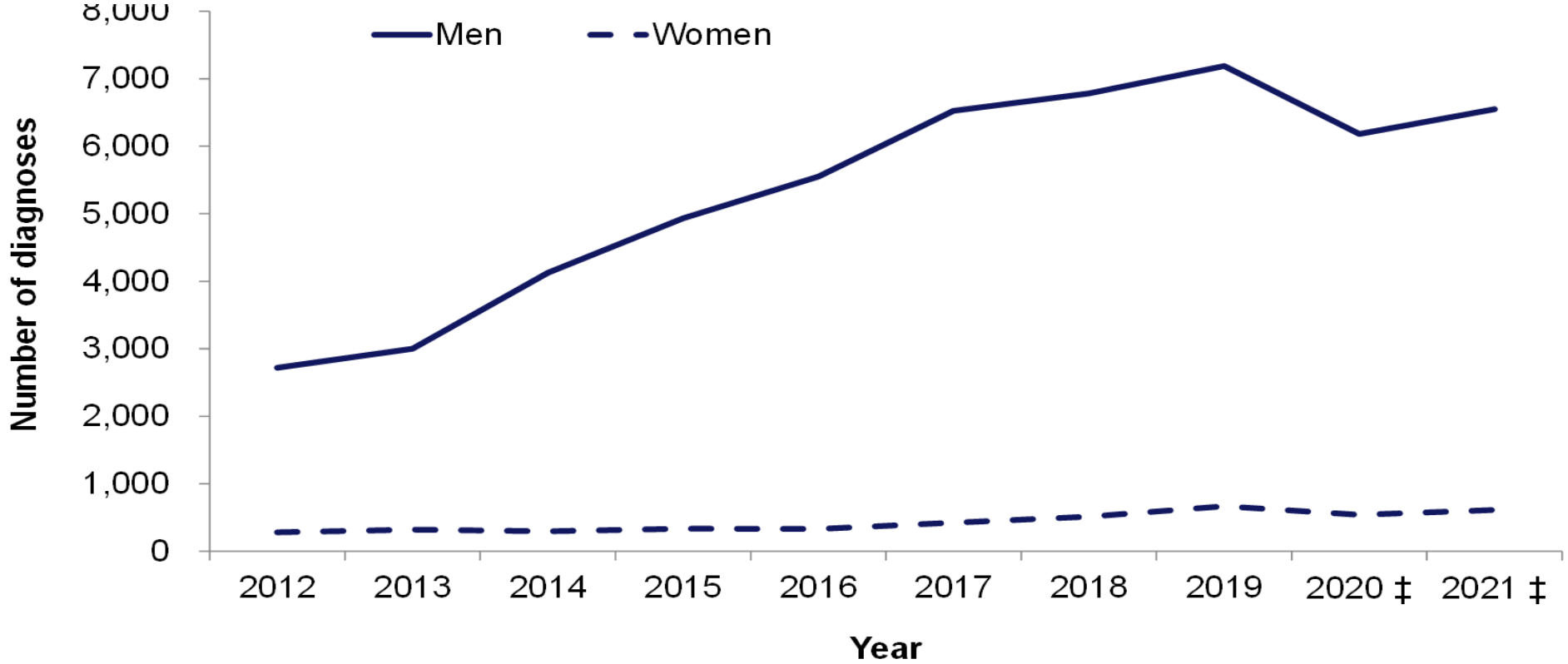
- One type of antibiotic can be overcome by different mechanisms
- Different classes of antibiotics can have the same mechanisms of resistance
- Need to find new targets?

Number of diagnoses of syphilis (primary, secondary and early latent) by sex, GUM clinics, England, Wales and Scotland*:1931-2010



*Equivalent Scottish data are not available prior to 1945. Northern Ireland data from 1931- 2003 are incomplete, therefore, have been excluded.
Routine GUM clinic returns

Number of syphilis (primary, secondary and early latent) diagnoses by sex: England, 2012 – 21



‡Data reported in 2020 and 2021 are notably lower than previous years due to the reconfiguration of SHSs during the national response to the COVID-19 pandemic

Notes in ChatGPT?

- ‘Write 5 short-note exam questions’

Video presentations

- Video Preparation: l***et me know if anyone has not participated***