

Cambridge English for  
**Scientists**

## ADDITIONAL ACTIVITIES

**UNIT 2** Indirect questions**a** Look at the pairs of sentences and answer the questions.

1

a What does *human genome* mean?

b I was wondering what human genome means.

2

a Is methanol a suitable solvent for cleaning lab glassware?

b Does anyone know if methanol is a suitable solvent for cleaning lab glassware?

1 Do the questions have the same meaning?

2 Which question is more polite?

3 Which words have been added to make sentence b more polite?

4 How has the word order changed?

5 Why is the word *does* used in 1a but not 1b?

6 Why is the punctuation different in 1b and 2b?

7 Why has the word *if* been added to the question in 2b but not in 1b?**b** Match the beginnings and endings of the sentences to make polite questions.

1 Can anyone tell me if	a a hydrogen bond can also act as an ionic bond.
2 I'd like to know if	b there is a simple experiment to distinguish between NaOH and KOH?
3 I'm trying to find out what	c I can make a good quality ferrofluid?
4 Could anyone tell me how	d the best make of microscope is.

**c** Underline the phrases in Exercise b which are used to make the questions polite.**d** Make the questions a–d more polite. Begin with the word/phrase given.

a How do you find electronegativity of an element?

Could \_\_\_\_\_

b What's the best way to store agarose gels?

I'm trying \_\_\_\_\_

c Where can I buy an inexpensive distillation set?

I was wondering \_\_\_\_\_

d Is it true that no two fingerprints are the same?

Does \_\_\_\_\_

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## ADDITIONAL ACTIVITIES

**UNIT 2** Ethics Committee Approval

- a** In pairs, check the meaning of the following words and phrases.
- confidentiality
  - informed consent
  - privacy
  - risk of harm
- b** Read the following extract from an ethical review of human research. In pairs, think of examples of research activities which would be unethical according to the information in sections A–C.

**Ethical Issues Checklist for Research Involving Humans**

The aim of an ethical review of human research is to ensure that the subjects are not put at risk of harm, are not disadvantaged and are made aware that they may withdraw at any time.

The process of ethical review concentrates on three main areas:

**A Gathering informed consent**

Research subjects must be fully informed of relevant aspects of the research before agreeing to participate. Researchers should ensure that individuals are not pressured into participation through unequal power relationships, payments or inducements.

**B Protection of privacy and confidentiality of records**

The research must protect the privacy and confidentiality of subjects and the data obtained from them.

**C Risk of harm to subjects or to groups in the community**

Individuals could be put at risk through the use of new or invasive procedures. They could also be harmed through damage to their cultural security or through processes which might expose them to discrimination or misrepresentation.

*adapted from: Ethics Checklist [.doc 113kB]*

- C** Now read the questions in the Ethics Approval Committee checklist below. Then in pairs, match a question (1–10) to the section of the text in Exercise b (A, B or C) it is connected to.

The following checklist is designed to alert you to the major types of ethical issues in your research.

Does this proposal involve: -

	YES	NO
1 Any form of physically invasive procedure on volunteer participants?		
2 Ionising radiation (X-rays, fluoroscopy or radioisotopes)?		
3 Minors, i.e. under the age of 18?		
4 Payments, other than reasonable recompense, to participants for their participation?		
5 Persons with an intellectual or mental impairment?		
6 Separate identification of, or focus on, specific racial groups?		
7 The administration of any form of drug, or placebo?		
8 The use of any participants with whom the researcher has a relationship such as teacher-student; employer-employee?		
9 Use of human tissue samples?		
10 Use of questionnaires or interviews which may be linked to the participant at any stage of the research, including the obtaining of data?		
If you answer YES to any of the questions in the checklist, you will be required to submit an application for ethics approval. For Application Forms please contact the Ethics Committee.		

- d** Now look at the summary Ryuchi made for his critical review on page 18 of the Student's Book. In pairs, use the checklist in Exercise c and decide which questions (1–10) from the checklist can be answered using Ryuchi's summary.
- e** In pairs, look at your answers to Exercise c and then say whether you think Martin, F-P.J., Rezzi, S., Pere-Trepat, E. *et al.* needed Ethics Committee Approval for their research.

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## ADDITIONAL ACTIVITIES

**UNIT 2** Teacher's Notes**Indirect questions**

- a** Students look at the pairs of sentences and answer the questions.

**Answers**

- 1 Yes
- 2 b is more polite. It is an indirect question whereas a is a direct question.
- 3 I was wondering... / Does anyone know...
- 4 a uses verb-subject question pattern. b uses the subject-verb statement pattern.
- 5 *does* is used as an auxiliary verb to form a question in the *present simple* in 1a. 1b does not have a *present simple* question structure so *does* is not needed.
- 6 The phrase which forms the indirect question is a statement in 1b, so no question mark is needed. It is a question phrase in 2b so the question mark remains.
- 7 In 1b the question word *how important* links the indirect question phrase to the question being asked. In 2a, there is no question word. *If* is used to link the indirect question phrase to the question.

- b** Students match the beginnings and endings of the sentences.

**Answers**

- 1 b    2 a    3 d    4 c

- c** Students find the phrases in Exercise b which are used to make the questions polite.

**Answers**

- 1 Can anyone tell me
- 2 I'd like to know
- 3 I'm trying to find out
- 4 Could anyone tell me

- d** Students rewrite a–d to make the questions less direct and more polite.

**Answers**

- a Could anyone tell me how you find the electronegativity of an element?
- b I'm trying to find out what the best way to store agarose gels is.
- c I was wondering where I can buy an inexpensive distillation set.
- d Does anyone know if it is true that no two fingerprints are the same?

## Ethics Committee Approval

- a Students work in pairs to check the meaning of the words and phrases.

### Answers



**Confidentiality** – an obligation to keep secret any personal matters the researcher finds out about a subject.

**Informed consent** – a person can give informed consent if they have been given all the relevant facts and have the mental ability to understand the facts and their implications.

**Privacy** – the subject's right to keep their personal matters secret.

Privacy and confidentiality could be breached if subjects are questioned on topics which could cause embarrassment/discomfort.

**Risk of harm** – the chance of the subject being hurt in some way by the research.

- b Students read the extracts from the ethical review. Ask students to work in pairs to think of examples of research activities which are unethical and then feed back to the whole group.

### Suggested answers



Gathering informed consent – secretly observing subjects; using subjects who are in the care of the researcher e.g. in a hospital or prison.

Protection of privacy and confidentiality of records – asking questions which may be embarrassing; storing data insecurely; publishing research in a way that could allow individuals to be identified.

Risk of harm to subjects or to groups in the community – using a procedure which could cause pain; focusing on one particular subsection of the population; withholding a particular treatment (e.g. to a control group).

- c Ask students to look at the checklist and to match the questions 1–10 to the three main aspects of the ethical review A–C.

### Answers



1 C 2 C 3 A 4 A 5 A 6 C 7 C 8 A 9 C 10 B

- d Ask students to look at Ryuchi's summary of Martin *et al.*'s research on page 18 of the Student's Book and to complete as many of the questions on the checklist as they can for this experiment. Ask students to feed back on what information they would need to answer all the questions.

### Answers



1 Y 2 N 3 N 5 N 7 Y 9 N 10 Y

The answers to questions 4, 6 and 8 are probably 'No' but more information would be needed to confirm this.

- e Ask students whether the experiment would have needed Ethics Committee Approval or not.

### Answer



The research would have needed Ethics Committee Approval because the answer to items 1, 7 and 10 are 'yes' and the form states that '*If you answer YES to any of the questions in the checklist, you will be required to submit an application for ethics approval.*'