10 ANIMAL TESTING

This unit looks at the role of animal testing in biomedical research and how the discipline is reforming through new practises and regulation in the face of ethical criticism from outside groups.

Skills focus

Reading
- recognizing the writer's stance and level of confidence or tentativeness
- inferring implicit ideas

Writing
- writing situation–problem–solution–evaluation essays
- using direct quotations
- compiling a bibliography/reference list

Vocabulary focus
- 'neutral' and 'marked' words
- fixed phrases related to animal testing
- fixed phrases from academic English

Key vocabulary

See also the list of fixed phrases from academic English in the *Vocabulary bank* (Course Book page 84).

animal model	drug safety	*in vitro*	rodent
animal testing	epidemiological	*in vivo*	scientific knowledge
animal welfare	ethical problem	morality	scientific practices
approach	experiment (n and v)	prohibit	suffering
ban (n and v)	fertilizer	R&D	tissue culture
behave	food additive	reduction	toxicological
campaigner	function	refinement	transparency
code of ethics	harmful	reform	valid
computer modelling	household chemical	regulation	volunteer
cosmetic (adj and n)	human benefit	regulatory body	
debate (n and v)	humane	replacement (n and adj)	
develop	invasive	researcher	

10.1 Vocabulary

Read the *Vocabulary bank* at the end of the Course Book unit. Decide when, if at all, to refer your students to it. The best time is probably at the very end of the lesson or the beginning of the next lesson, as a summary/revision.

Lesson aims

- understand when words are 'neutral' and when they are 'marked' (see *Vocabulary bank*)
- understand and use phrases expressing confidence/tentativeness (see *Vocabulary bank*)

Further practice in:

- fixed phrases/compound nouns from the discipline
- fixed phrases from academic English
- stress within words and phrases
- synonyms

Introduction

1 Revise food safety words and phrases from the previous unit. Give definitions and ask students for the words/phrases. For example:

packaging – the material in which the food is stored or/and sold, e.g., cardboard, cling film

irradiation – process of passing radiation through food to destroy potential pathogens and other micro-organisms

food safety – subject field that involves checking and monitoring food production, processing and storage to protect consumers from potentially harmful organisms, chemicals, etc. found in food

transmission route – the way a disease is passed from the infected source to an uninfected individual

cross-contamination – the passing of a harmful micro-organism from one food source to another

quality control – the system for maintaining and verifying a level of quality in a process

risk analysis – a procedure to identify the health hazard, characterize it and quantify its level of risk to the population

active ingredient – the chemically active part of a compound

side effect – an effect of a substance that is in addition to its desired or primary effect, usually negative

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gastrointestinal infection – infection of the stomach and/or digestive tract

2 Revise the following phrases used in academic writing. Ask students what sort of information will follow these phrases.

On the other hand …
In conclusion …
To put it another way …
As Smith (2002) pointed out …
Research has shown that …
Part of the difficulty is …
To start with …
This can be defined as …
As a result …
Finally …
Given what has been shown above …

Exercise A

Set for individual work and pairwork checking. Feed back with the whole class.

Answers

Model answers:

Word	Part of speech	Meaning/synonym
cosmetic	n (C), adj	make-up; substance to beautify a person's appearance
epidemiological	adj	describes study dealing with incidence of a disease in a population
invasive	adj	needing a needle, catheter, etc. to enter body during a medical procedure
refinement	n (C)	adjustment, advance; a change made to improve efficiency
reform	n (C), v (T/I)	revision, alteration; an improvement of something which is not correct
regulation	n (C), adj	law, statute, rule; a rule prescribed by an authority
rodent	n (C), adj	animals belonging to order *Rodentia* – characterized by gnawing ability
suffering	n (C/U)	anguish, hardship; state of enduring pain
volunteer	n (C), v (T/I), adj	a person who freely offers to take part in an activity or undertake a task
welfare	n (U)	well-being; the state of well-being of a person or animal

Exercise B

1 Set for individual work and pairwork checking. Other sources besides dictionaries could be medical textbooks, other reference books or the internet.

2 Show students how they can draw the stress pattern for the whole word as well as just locating the stressed syllable. If they use the system of big and small circles shown in the Answers section, they can see the pattern for the whole phrase quite easily.

Answers

Model answers:

1

animal welfare	physical and psychological state of animals kept in captivity
animal testing	experimenting on animals to see the effects of drugs, cosmetics, etc.
scientific knowledge	knowledge and information put together by systematic study and observation
drug safety	study into the effects of drugs to ensure their safe use by humans
animal models	animals used to research a human disease
in vivo	research carried out in a living organism
regulatory bodies	authorities that watch over the industry and establish rules for activities in the sector
in vitro	research carried out in a laboratory setting without the use of a living organism – literally *in glass*
computer modelling	use of computers to research a human disease
code of ethics	general principles about an organization's beliefs

2

animal welfare Ooo Oo
animal testing Ooo Oo
scientific knowledge ooOo Oo
drug safety O Oo
animal model Ooo Oo
in vivo o Oo
regulatory bodies ooOoo Oo
in vitro o Oo
computer modelling oOo Ooo
code of ethics O o Oo

Exercise C

Set for pairwork or class discussion. Encourage students to speculate about what might be happening. Students should use the highlighted phrases and other words that are useful from the text in Exercise B; they can also use words from Exercise A.

Feed back with the whole class. Accept anything reasonable.

Answers

Possible answers:

1 The photos show **rodents** housed in cages. These are scientific lab animals, living in conditions which suggest good **animal welfare**.

2 We can see a child-resistant safety cap from a bottle of pills, depicting **drug safety**.

3 The screenshot is of a computer statistics program running, investigating a human disease – this is **computer modelling**.

4 The photo shows a range of different **cosmetic** products.

5 An animal is being tested in a laboratory – this is **in vivo** testing.

6 There is a test tube and a flask being used for testing, but no animals – this is **in vitro** testing.

7 This shows a **code of ethics** on a desk.

8 An animal is involved in an experiment and may be **suffering**.

Exercise D

Introduce the idea of 'neutral' and 'marked' vocabulary (see *Language note* below and *Vocabulary bank*). Set for individual work and pairwork checking.

Feed back, discussing any differences of opinion about whether the words are marked, and in what sense they are marked. (Some students may argue that *minimal*, *significant* and *insignificant* are not marked, for example. Others may argue that they are marked, because they suggest not just that something is big/small, but that it is important/unimportant. Compare *There is a small problem with the program* and *There is an insignificant problem with the program*.)

Answers

Model answers:

Neutral	Marked
rise, increase	'rocket, soar (v)
fall, decrease	co'llapse (v and n), 'plummet (v), plunge (v and n), slump (v and n)
big, large	e'normous, huge, 'massive, sig'nificant, tre'mendous* (adj)
good	'brilliant, out'standing, su'perb, tre'mendous* (adj)
small	insig'nificant, 'minimal (adj)

* 'tremendous' can mean both very large and very good, so students may place this word in either category.

Language note

One way of looking at vocabulary is to think about 'neutral' and 'marked' items. Many words in English are neutral, i.e., they are very common and they do not imply any particular view on the part of the writer or speaker. However, there are often apparent synonyms which are 'marked' for stance or opinion. Neutral words are usually thought of as basic vocabulary (the adjectives often have opposites, e.g., *big/small*; *light/dark*). Marked words tend to be less frequent and are therefore learnt later.

The marked words in Exercise D are not totally synonymous. Their appropriate use and interpretation will be dependent on the context and also on collocation constraints. For example, one can say that a building is 'massive' but not (in the same sense) 'significant'.

Exercise E

1 Set for individual work and pairwork checking. Make sure that students understand any words they are not sure of. Feed back with the whole class by asking individual students to read out a sentence. Make sure that the pronunciation and stress patterns of the marked words are correct.

2 Put the table from the Answers section on the board. Make sure that students understand *confident* and *tentative*. Elicit answers from the whole class and complete the table. Point out that these phrases are usually found in conversation or in informal writing such as this. Academic writing also requires writers to show degrees of confidence and tentativeness. The mechanisms for this will be covered in the next lesson.

Answers

Model answers:

1 It's clear that live animal testing numbers have (*risen*) soared/rocketed this year, and it is generally accepted that the university needs to address this issue. With our new IT infrastructure, we undoubtedly have a (*good*) tremendous/superb opportunity to cut overall numbers in the next few years.

It is fair to say that targets to reduce animal testing numbers have been (*challenging*) tough/stiff/demanding, but perhaps we should consider any reduction to be a (*good*) brilliant/outstanding result. It is unlikely that there will be (significant) enormous/huge/great/major/important changes to our reduction policy and we can be confident that our actions will lead to a sustained (*fall*) plummet/plunge/collapse in the next five to ten years overall.

2

	Very confident	Fairly confident	Tentative (= not confident)
It's clear that	✓		
it is generally accepted that		✓	
we undoubtedly have	✓		
It is fair to say that		✓	
perhaps we should			✓
It is unlikely that		✓	
We can be confident that	✓		

Closure

1 For further practice of neutral and marked vocabulary, ask students to write down some basic words, e.g., four verbs, four nouns and four adjectives. Put a list of these on the board and ask students if they are neutral or marked. See if you can find any opposites. Ask students to find some synonyms for neutral words – they can use a dictionary. A synonyms dictionary or Microsoft Word thesaurus can be useful here as well.

2 Ask pairs or groups to define as accurately as they can three of the fixed biomedical science phrases from the *Vocabulary bank*. Give them a few minutes to think of their definitions, then feed back and discuss as a class.