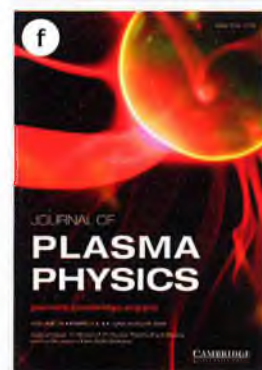
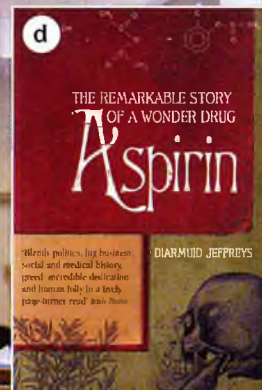


UNIT 2

The scientific community

- Communicating with scientific communities
- Writing a critical review
- Completing a Material Transfer Agreement



Communicating with scientific communities

1 a Match the methods of communication (1–6) to the pictures (a–f).

- | | |
|-----------------------------------|------------------------------|
| 1 an academic journal | 4 a popular science magazine |
| 2 a conference | 5 a popular science book |
| 3 an online forum or science blog | 6 a newspaper |

b Which of these ways do you usually use to communicate?

c Why is it important for scientists to keep in touch with:

- other people in their field (e.g. biology)?
- people in their specialism (e.g. molecular biology)?
- people in other fields of science?

d In pairs, read the following statements and say which form(s) of communication from Exercise 1a the speakers should use to find the information they want.

1 I'm trying to learn more about the Hadron collider because it's big news, but it's not even close to my area so I'm finding the papers on it heavy-going.

2 At my university, I don't meet enough people in my field – I really need to network and build some connections with people working around the world.

3 I'm having a problem with one of my protocols. I've tried a few different things, but with no luck – I could do with some suggestions from other people of what to try next.

- 2 a Read the following five extracts and then say which form (or forms) of communication from Exercise 1a each one comes from. Which form(s) of communication are *not* included in these extracts?
- A ... more people were pain-free when using the handheld device than those who had used an identical dummy device. Although the study by Lipton *et al.* (2010) has reliable results, there are some points to consider when putting these findings into context. Importantly, the results will need to be verified in larger trials that directly compare ...
- B Tea and coffee drinkers have a lower risk of developing type 2 diabetes, a large body of evidence shows. And the protection may not be down to caffeine since decaf coffee has the greatest effect, say researchers in *Archives of Internal Medicine*. They looked at ...
- C ... can be rapidly generated by lentivirus-mediated transgenesis. RNAi also holds great promise as a novel therapeutic approach. This report provides an insight into the current gene silencing techniques in mammalian systems.
- D Hi! Has anyone had any experiences with nanoparticles sticking to glassware :-(? If so, does anyone know if there's a suitable silylation protocol to pre-treat the glassware to do something about this annoying non-specific adsorption? Thanks!
- E Animal and *in vitro* studies suggest that aspirin may inhibit breast cancer metastasis. We studied whether aspirin use among women with breast cancer decreased their risk of death from breast cancer. This was a prospective observational study based on ...

b How easy was it to decide where extracts came from? How did you decide on the right answer?

- 3 a The language we use changes according to why we are writing (the purpose) and who we are writing for (the reader). It is important to notice the different styles of language used in English. Complete the second column of the table below, carefully reading the appropriate extract (A–E).

Feature	Examples	Extract
1 Asks the reader questions	Has anyone had ... ? _____	D D
2 Uses multi-word verbs (a verb with an adverb or a preposition)	_____ do something about	B D
3 Uses exclamation marks and emoticons	Hi! _____	D D
4 Uses non-specific references to the work of other researchers	_____	B
5 Uses specific references to the work of other researchers	_____	A
6 Uses impersonal phrases to avoid saying 'You' or 'We'	there are some points to consider _____	A E
7 Uses passive verbs to avoid saying who carries out a process	_____ can be rapidly generated	A C
8 Uses Latin language expressions	<i>et al.</i> _____	A E

- b** Which of the features in the table (1–8) are appropriate for formal for scientific research papers? Which are appropriate for personal communication (such as email)?

4 a In pairs, discuss the following questions.

- 1 When you have a problem at work, who do you usually ask for help?
- 2 Have you ever asked a question on a science internet forum? If so, was your question answered?



- b** Read three recent posts from an online forum (A–C) below. Imagine you belong to the forum where these questions are asked. Which questions could you answer? Which answers could you guess?

- c** Read the posts again. For each post, say which sentence or sentences (1–3) in each one the writer uses to:

- a ask the question
- b say what the problem is
- c thank the reader

- d** How are the questions in the Subject field of each post different from normal questions?

- e** Think of a question related to your own research. Then write a three-sentence post for an online forum in an appropriate style using the phrases in the box to help you.

- Does anybody know what ... is ... ?
- I know that ... , but I can't find / don't know ...
- I was wondering how / what / why ...
- I don't mean ... , but ...
- In other words, ...
- Any help here would be appreciated.
- Thanks in advance.

5 In pairs, discuss the following questions.

- 1 What kinds of text do you need to write in English for your work or studies?
- 2 Why is it important to write your texts in an appropriate style?
- 3 What can you do to take note of the different styles of language used in English texts?

A

Subject: Filovirus Host Range?

(1) Does anybody know what the host range is for filoviruses (i.e. Ebola and Marburg)? (2) I know that they can infect most (all?) types of mammals and several species of birds, but I can't find the actual host range anywhere. (3) Any help here would be appreciated.

B

Subject: materials which x-rays can't pass through?

(1) I've been looking for a while now, but I can't find anything telling me what the radiopaque materials are. (2) In other words, which materials can't x-rays pass through? (3) Thanks in advance.

C

Subject: Quality of scientific writing considered in peer review?

(1) I was wondering how important the quality of the writing of a submitted paper is in the peer review process. (2) I don't mean the quality of the data, but the actual writing. (3) In other words, will a nicely written paper with the same data be more likely to be accepted?

Writing a critical review

- 6 a Read the headlines and beginnings of two news articles reporting a recent scientific development. Then answer the questions below.

The 'Chocolate Cure' For Emotional Stress

There may well be another important reason for giving your sweetheart sweets for Valentine's Day ...

New Evidence That Dark Chocolate Helps Ease Emotional Stress

The 'chocolate cure' for emotional stress is getting new support from a clinical trial published ...



- 1 Do you think the claims made in the headlines seem likely or unlikely? Why?
 - 2 In general, how can the science reported in the media differ from the actual science? Why do you think there is a difference?
 - 3 If you wanted to learn more about the research you see reported in the newspaper, where could you look for more information?
- b Martina, a junior researcher, is supervising Ryuchi, an MSc Physiology student. Martina has asked Ryuchi to investigate the claims in the headlines and then to write a critical review of the research. Complete the sentences below in your own words. Then in pairs, discuss your answers.
- a If you read research *critically*, it means that you ...
 - b You should always read research critically because ...
- 7 a ► 2.1 Ryuchi has some questions about writing a critical review. In pairs, discuss questions 1–5. Then listen and make notes on how Martina answers the questions.
- 1 How long should my review be?
 - 2 Can I write a critical review if I've only read the abstract?
 - 3 How should I approach the reading? What should I read first?
 - 4 Is it a good idea to think of questions I want answered?
 - 5 Do I need to take notes or can I just highlight the relevant bits of the text?
- b Before reading, Ryuchi writes seven questions to help him. Match the questions (1–7) to the section of the research paper below where you would expect to find the answer.
- 1 What variables were investigated?
 - 2 How did the authors interpret the results?
 - 3 What were the main findings?
 - 4 Why is this research relevant?
 - 5 Who/What was studied?
 - 6 What procedure was used?
 - 7 What was the hypothesis?

- Introduction: _____
- Method: _____
- Results: _____
- Discussion: _____

- C** Ryuchi has taken notes on the research paper that was reported in the news headlines in Exercise 6a. Use the glossary (pages 117–125 to check the meaning of the words in the box.

anxiety assessment classify consumption hormone metabolic microbiota
participant trial period urine

- d** Read the Summary column. Which questions from Exercise 7b can you answer?

Reference: Martin, F.-P.J., Rezzi, S., Pere-Trepat, E. *et al.* (2009). 'Metabolic effects of dark chocolate consumption on energy, gut microbiota, and stress-related metabolism in free-living subjects' *J. Proteome Res.* 8 (12), pp 5568–5579.

Section of paper	Summary	Opinion
Method:	• 30 young healthy adults • 40 g of dark chocolate/day x 14 days (20 g am, 20 g pm) • pre-trial assessment of anxiety levels using questionnaires • participants classified as high or low anxiety • days 1, 8, 15 – blood and urine samples taken • analysed changes in cortisol and catecholamines in urine & energy metabolism and gut microbial activities	• small sample • (1) _____ trial period • using 2 groups further (2) _____ sample size • didn't look at changes in (3) _____ levels or reported (4) _____ • No (5) _____ group • only young healthy participants
Results:	• reduction in stress hormones in the urine for all the participants • less difference between groups in energy metabolism and gut microbial activity	
Discussion:	• 40 g of dark chocolate a day for two weeks can change metabolism • could have long-term effects on health	• can't prove that (6) _____ caused the changes • need more people with the (7) _____ anxiety levels • give either chocolate or a (8) _____ • look at long-term stress, anxiety, health and (9) _____ changes • should use a (10) _____ trial

- e** ► 22 Before writing his critical review, Ryuchi discusses his notes with Martina. Listen and complete the notes in the Opinion column, using one word from the recording for each answer.

- f** From the information in Ryuchi's notes, discuss in pairs whether you think the research is:

- credible?
- original?
- reliable?
- significant?
- valid?

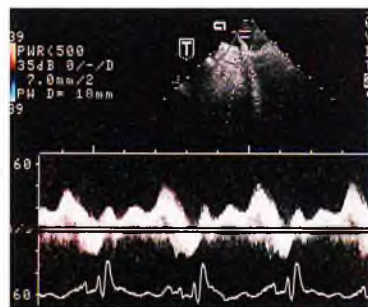
8 a Read two extracts from Ryuchi's completed critical review and answer the questions.

- 1 Do the extracts include all the main points from Ryuchi's notes in Exercise 7d?
- 2 Which extract (A or B) ...
 - a summarises part of the research?
 - b gives an evaluation?

A 30 young healthy adults completed a pre-trial questionnaire to assess their anxiety levels and based on this, they were classified as either high or low anxiety. All participants ate 40 g of dark chocolate a day for 14 days. On days 1, 8 and 15 urine and blood samples were taken and changes in cortisol and catecholamines in the urine were analysed, as well as energy metabolism and gut microbial activity. The research found that after 14 days, the level of stress hormones in the urine was reduced in all participants. In addition, there was less difference between the two groups in energy metabolism and gut microbial activity.

B One problem with the research is the small sample size (only 30 people) which was further divided into smaller groups. There was also no control group in the study, making it impossible to conclude that chocolate was the cause of the changes seen rather than some other factor such as other food or drink, lifestyle change or activity level. Furthermore, only young healthy adults were investigated and so the results cannot be applied to those who are older or have pre-existing health issues.

b Read the six extracts below from a critical review of another paper. Replace the underlined phrases with an underlined expression from Exercise 8a.



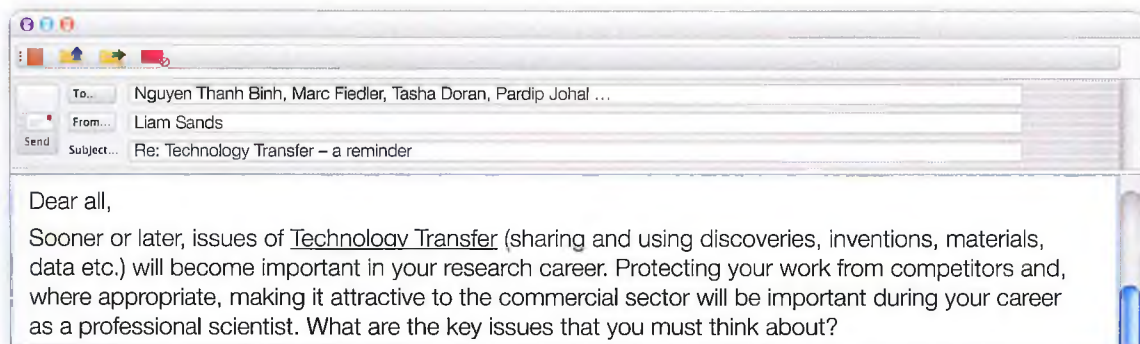
- a A bad thing about this research is there were only 20 participants. Another problem is all the subjects were hospital employees.
- b Also, the blood flow in the brachial artery was measured before they drank the coffee, and 30 and 60 minutes after.
- c The researchers looked at how the blood flow changed.
- d The result of the research was that the people who drank caffeinated coffee had decreased blood flow to their upper arm.
- e The results might not be the same for the general population. There was also no measurement of the changes in blood pressure and blood flow after one hour, so we can't know when blood flow returns to normal.
- f 20 subjects, between the ages of 25 and 50, who usually drank little coffee, were given either a caffeinated or decaffeinated Italian espresso coffee. They gave blood before the coffee was drunk, and an hour later.

- C Put extracts a–f in the correct order to make two paragraphs. One paragraph should summarise part of the research, the other should give an evaluation.

- 9 Find a piece of published research you are interested in and then make a table like the one in Exercise 7d and take notes. Use your notes to write two paragraphs of a critical review in an appropriate style.

Completing a Material Transfer Agreement

- 10 a Read the beginning of the email sent to members of a laboratory. Then in pairs, answer the questions below.



- 1 What is the purpose of the email?
- 2 What kind of discoveries, inventions, materials and data might you share with other scientists in your field?
- 3 What do you think are the key issues of technology transfer?

- b The next part of the email identifies some key issues and offers advice on them. Match the headings (A–E) to the extracts (1–5).

- | | |
|---|--|
| A Huh??? What do I do now?? | D Your research is valuable – to others! |
| B Always read the small print! | E Who, me? |
| C Look out! There may be a thief about! | |

1 _____

Sooner or later someone in your field is going to ask you for some materials. Never send out any material without first checking if a Material Transfer Agreement (MTA) is needed.

2 _____

Don't leave sensitive information, notebooks, etc. open on your desk or in unlocked rooms at the end of the day. You never know who might be in the building ...

3 _____

If you request materials from another lab, you will probably be asked for an MTA to sign. Not all MTAs are the same (some say 'we claim ownership of everything developed in your lab') so read carefully before signing and always ask if you're not sure.

4 _____

Yes, you! Your research may have a commercial application. Always talk possible applications over with your supervisor or division head/director before you publish.

5 _____

If you are still none the wiser, or unsure about any of the issues in this email, please talk to your group leader or contact me (Liam Sands) at the Technology Transfer Office.