

Steroids, the dry lab and review

60 minutes • B1.1.10 and B1.1.13 • Chapter 11 • The dry lab

Steroids crossing the bilayer, the melting points of fats, and a review of the whole subtopic

BY THE END, STUDENTS CAN

- ☐ Compare saturated, monounsaturated and polyunsaturated fatty acids and explain their melting points B1.1.10
- ☐ Identify a steroid from its four rings and explain how oestradiol and testosterone cross the bilayer B1.1.13

TIMING

0-8	8 min	Spot the steroid	
8-33	25 min	The dry lab: Fats on the bench	
33-45	12 min	Codenames-style keyword game	
45-57	12 min	Exam question, timed	
57-60	3 min	Exit: form and function	
	60 min	One lesson	

STARTER

- 8 min** **Spot the steroid**
- Chapter 11's first figure on the board. The class votes A to F before each tap. Then the chapter 11 predict box.

ON THE BOARD, FROM THE GUIDE

Open the guide on the projector at each chapter (the links work in this PDF). Every figure plays from its own buttons, and the lesson's slides have the same figures, step by step, in the order of this plan.

11 Four rings, and straight through the membrane

CHAPTER 11 IN THE SLIDES

Tap the parts of the figure in turn: Testosterone, α -glucose, A steroid skeleton, Part of an amylose chain, Oestradiol and A triglyceride.

Step through the figure (5 steps, the arrow keys on a projector). Stop on each caption and ask what changed before you go on.

1. The bilayer's core is **hydrophobic**.
2. Non-polar **testosterone** dissolves into the core,
3. and diffuses out the other side.
4. **Oestradiol** crosses the same way.
5. Polar glucose and charged ions cannot cross the core: they need proteins (B2.1).

Predict box: Testosterone crosses a membrane with no transport protein. Glucose cannot. Why? Hands up or mini whiteboards first.

Answer B: Testosterone is non-polar, so it dissolves in the bilayer's core

THE LESSON

25

min

The dry lab: Fats on the bench

In pairs, on the pure fatty acids bench at 1 °C a minute, stirred: the double-bond series (stearic, oleic, linoleic and α -linolenic acid) and the chain-length series (lauric to arachidic acid), three runs each. Pool the means on the board, then answer the three questions under the lab.

12

min

Codenames-style keyword game

The game below, with the key terms of this guide.

12

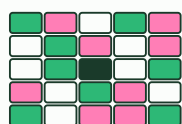
min

Exam question, timed

A written question on carbohydrate and lipid stores, or on fatty acids, from the B1.1 exam maker (in Practise and revise, below): 9 minutes, then peer-marked. For homework, [the Check step](#).

Homework or extension: the reaction GIF, the polymer clay keyring, Tarsia or dominoes on B1.1, and the Check step. A note for the board in lesson 3: a triglyceride has three fatty acids, three ester bonds, and released three waters.

ACTIVITIES



GAME

Codenames-style keyword game

A 5 by 5 grid of key terms from this guide; two teams. Each team's clue-giver gives one word and a number that link several of their team's terms. Use the key terms in the chapters (anabolism and catabolism belong to C1.1, so leave them out).

Needs: a printed or projected grid, two colours of counters.

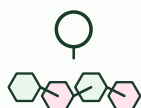


MAKE

A reaction in motion

Students make a short GIF or stop-motion film of one condensation or hydrolysis (glucose, a triglyceride or a dipeptide), showing which atoms leave as water or where the water's H and OH go. Any GIF maker or a phone's stop-motion app. Homework, or 20 minutes in class.

Needs: devices, paper or model pieces.



MAKE

Polymer clay keyring

Each student models one monomer or a short polymer in polymer clay with a consistent colour code (C black, H white, O red, N blue, and P in the kit's own colour), on a keyring, and bakes it as the clay's packet says. End of the unit, or homework.

Needs: polymer clay, keyring loops, an oven.

DRY LAB

Fats on the bench

Freeze fatty acids and kitchen fats, warm them in a bath and catch the moment each one melts. [The dry lab](#), with its tasks and questions under it, and its results as a CSV for a pooled class graph.

Needs: one device per pair.

PLENARY

3

min

Exit: form and function

One line each on how a change of form changes function: one OH turned over, branching, a double bond, a polar head, four non-polar rings.

WHAT STUDENTS GET WRONG

"Small molecules cross membranes and big ones do not." Polarity decides, not size.

STRETCH AND SUPPORT

Support: the key terms (tap the dotted words) as a glossary, and the bond builder's tap mode on a tablet.

Stretch: in the dry lab, predict the mystery acid's melting point from both graphs before measuring it, and explain the size of your error.

IN THE GUIDE

- 11** [Four rings, and straight through the membrane](#)
- Lab** [Dry lab: Fats on the bench](#)
- A11** [The whole guide, with the figures that play](#)
- PPTX** [This lesson's slides, in the order of this plan](#)

PRACTISE AND REVISE

BUILD FOR YOUR CLASS

- [Tarsia puzzle, dominoes and picture reveal](#) on B1.1, built from its key terms and ready to print
- A [pub quiz](#) with rounds on B1.1, to present or run with no projector
- An [escape room built from the question bank](#) on B1.1

ALREADY ON THE SITE FOR B1.1

- [Quiz: Biological Molecules](#)
- Revision map: [B1.1 Carbohydrates and lipids](#), to fill in
- Exam questions: [B1.1 in the exam maker](#), a paper with its markscheme

CARD SETS ON SPLYCR

Open a set to host it as a class game, or make a copy to edit.

- [B1.1 Carbohydrates](#)
- [B1.1b Lipids](#)

EXAM PRACTICE

Check yourself

Set it for homework: a fresh paper of exam-bank questions on B1.1 each time, marked as students go and saved to their Exam practice when they are signed in.

biologybybradford.com/exam-maker/sit?topics=B1.1&level=HL&paper=quiz&marks=15&src=ep



How this was made. The course structure, the activities and the teaching choices come from my own classroom, my presentations and my years of teaching IB and AP Biology. I use Claude, an AI, to help write and build the interactive guides, lesson plans, slides and practice questions, and to draw the diagrams and code the interactives. I direct the work and review it against the IB and AP specifications before it goes live.