13 Pigments and spectra – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	**Write it 3 times** (English)		
pigments			
chlorophyll			
absorption spectrum			
action spectrum			
Chromatography			

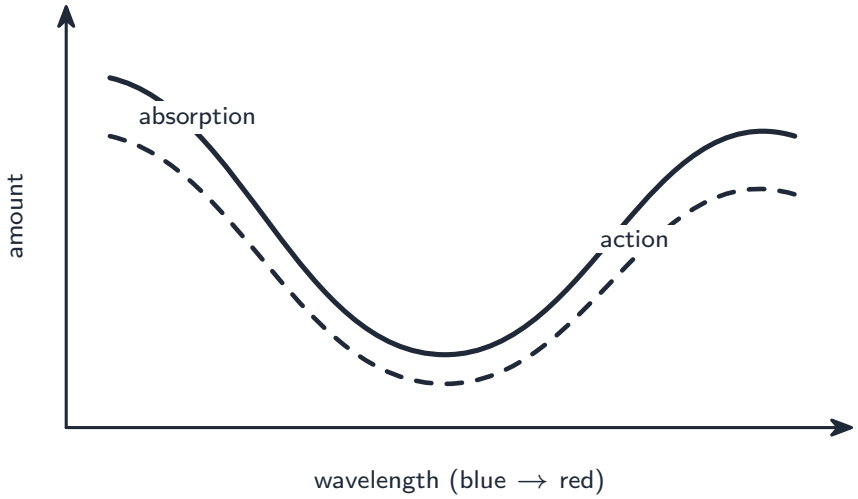
Recall

Light is trapped by coloured **pigments** in the thylakoids. We can study and separate them.

New ideas

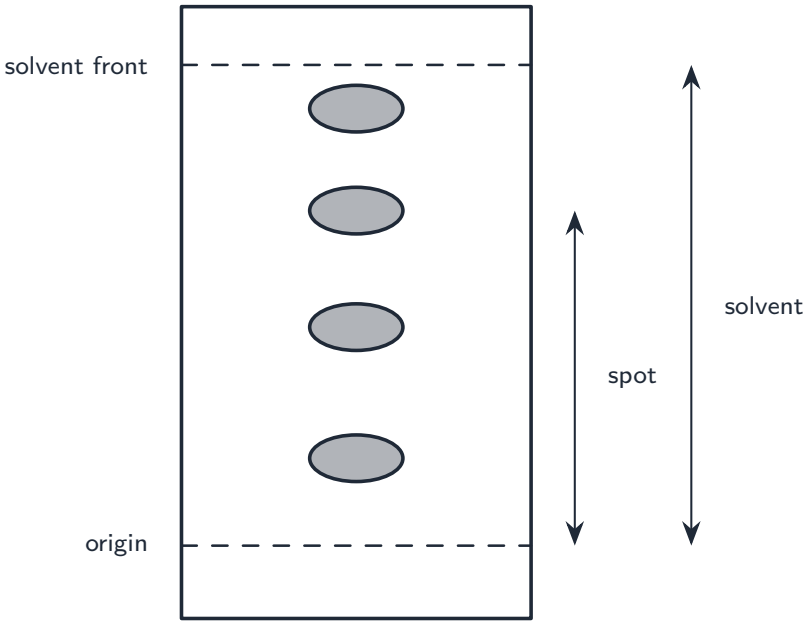
Read these first, then do the Practice.

1 Two spectra that match



- **chlorophyll** and other pigments absorb mainly red and blue light;
- the **absorption spectrum** shows how much light a pigment absorbs;
- the **action spectrum** shows how fast photosynthesis goes. They match closely – proof the pigments drive photosynthesis.

2 Separating pigments



Chromatography separates pigments: each travels its own distance. Its **Rf value** is the spot distance ÷ the solvent distance.

Worked example. A pigment spot moves 4.0 cm while the solvent moves 8.0 cm, so its $R_f = 4.0/8.0 = 0.50$.

Watch out: chlorophyll absorbs mainly red and blue light and *reflects* green – which is why leaves look green. The absorption and action spectra *match*, which is the evidence that pigments drive photosynthesis.

Practice

Try these in order.

13.6 What is a *pigment*? [1]

13.7 Which two colours of light does *chlorophyll* absorb most? [1]

13.8 What does an *absorption spectrum* show? [1]

13.9 Why does the action spectrum matching the absorption spectrum matter? [1]

13.10 Write the formula for an *Rf value*. [1]

13.11 Challenge. Leaves look green, yet green light is the *least* useful for photosynthesis. Explain the link between these two facts. [2]