

14–16 years

Presenting investigations: academic posters



Education
Inspiring your teaching and learning

<https://rsc.li/3FWp45U>

Learning objectives

1. Explain why you have carried out an experiment.
2. Display your observations and data using appropriate methods.
3. Present your conclusions clearly and concisely.

Scientific posters

- It is important that scientists communicate the results of their experiments clearly.
- Scientists use scientific posters to present their ideas and results to a wide audience.
- Posters provide a simple layout where scientists can summarise their experiments.

Example academic posters

Example posters

Non-targeted metabolomic strategy for characterization of botanical origin of honey samples using headspace gas chromatography - ion mobility spectrometry (HS-GC-IMS)

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Aim of this work
Investigate the potential of HS-GC-IMS for the authenticity of the botanical origin of honey, developing a non-targeted metabolomic strategy to discriminate different botanical sources. In addition, a simultaneous targeted strategy is developed that allows the quantification and identification of volatiles in honey.

Workflow
HS (100 °C, 15 min) → GC (50 °C (3 min) → 10 °C min⁻¹ to 130 °C (6 min), Total GC run time 17 min) → IMS (80 °C, 150 mL min⁻¹ N₂) → Detector

Results
89 samples from ten different botanical origins
15 volatiles identified in the honey samples

Method characterization

Analyte	Monomer and dimer sum	LOQ (µg/L)
2-Butanone	$v = 1.06681(x) + 3.5724$	0.9849
Ethyl acetate	$v = 0.93881(x) + 3.1664$	0.9932
2-Pentanone	$v = 0.99279(x) + 2.665$	0.9893
Valeraldehyde	$v = 0.53819(x) + 2.1385$	0.9896
4-Methyl-2-pentanone	$v = 0.59199(x) + 0.5193$	0.9889
Hexanone	$v = 0.54623(x) + 1.8159$	0.9994
Hexanal	$v = 0.48279(x) + 1.7221$	0.9912
Trans-2-hexenal	$v = 0.54829(x) + 0.4659$	0.9868
Heptanone	$v = 0.71759(x) + 1.6278$	0.9936
Heptanal	$v = 0.49079(x) + 1.6187$	0.9891
Benzaldehyde	$v = 0.46623(x) + 0.5655$	0.9850
6-Methyl-5-hepten-2-one	$v = 0.41669(x) + 0.5102$	0.9887
Octanal	$v = 0.30079(x) + 0.2634$	0.9906
Linoleal	$v = 0.12289(x) + 0.0734$	0.9523
Nonanal	$v = 0.08449(x) + 0.6731$	0.9743

Quantification of identified volatile compounds
Classification according to its floral origin
100% validation success

Conclusions
The volatile compound contents were used to compare five different honey floral origin by means of ANOVA and LSD tests, concluding that valeraldehyde and hexanal were more abundant in albal honeys, whereas the concentration of 6-methyl-5-hepten-2-one was higher in orange blossom honey.

In particular, the use of the normalised data with the RIP intensity adjusted to UV scale with logarithmic transformation in an OPLS-DA model allows to correctly classify 100% of the samples. The applicability of the method was demonstrated by analysing 14 unknown samples being classified into three different groups.

Analytical Methods
A non-targeted metabolomic strategy for characterization of the botanical origin of honey samples using headspace gas chromatography-ion mobility spectrometry.

Logos: f SéNeCa(+), ROYAL SOCIETY OF CHEMISTRY, @MariaGNicolas1, @AIM_UMU

Molecular Coenzyme Driven Non-Equilibrium Amyloid Polymers Featuring Temporal Charge-Selective Catalysis

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Abstract
We show a short peptide-based amyloid that can bind to a small molecular coenzyme via reversible covalent linkage to access nonequilibrium amyloid microphases demonstrating covalent catalysis. Subsequent hydrolysis of the coenzyme leads to disassembly, realizing a variance of surface potential with time. This leads to dynamically modulate catalytic activities of the nonequilibrium assemblies mimicking the complex phenomenon of transient phosphorylation of proteins.

Biological Inspiration
Temporal modulation of enzymatic activity via transient phosphorylation mediated by coenzymes

Coenzyme Driven Generation of Non-equilibrium Amyloid Polymers Showing Covalent Catalysis
Accelerated Covalent Catalysis from the Assembled State

Temporal Switching of Charge-Selective Catalysis

Charge-Selective Dye Binding

Dynamic Switching of Surface Potential

Acknowledgements
@DDasLab @Surashree24

References
1. K. Das, L. Gabrielli, L. J. Prins, *Angew. Chem., Int. Ed.* 2021, 60, 20120-20143.
2. B. Sarkhel, A. Chatterjee, D. Das, *J. Am. Chem. Soc.* 2020, 142, 4098-4103.
3. S. Bal, K. Das, S. Ahmed, D. Das, *Angew. Chem., Int. Ed.* 2019, 58, 348-347.

Before your investigation

1. What is the title and aim of your investigation?
2. How could the techniques or results from this investigation be used in real life?
3. Where did you find the information for your answer to question 2 (eg, website name or book title)?
4. Design a results table for your investigation data.

After your investigation

5. What type of graph or chart are you going to use for your results?
6. Explain why you have chosen this format to show your results.
7. Describe the pattern of your results. What conclusions can you draw from your results?
8. Explain how you could use your results to address a real-life problem. You should link your results back to the context you investigated before the practical.
9. How could you have improved the experimental method?



Poster layout 1

Title and aim of your investigation (Q1)

The context of your investigation
(Q2 and Q3)

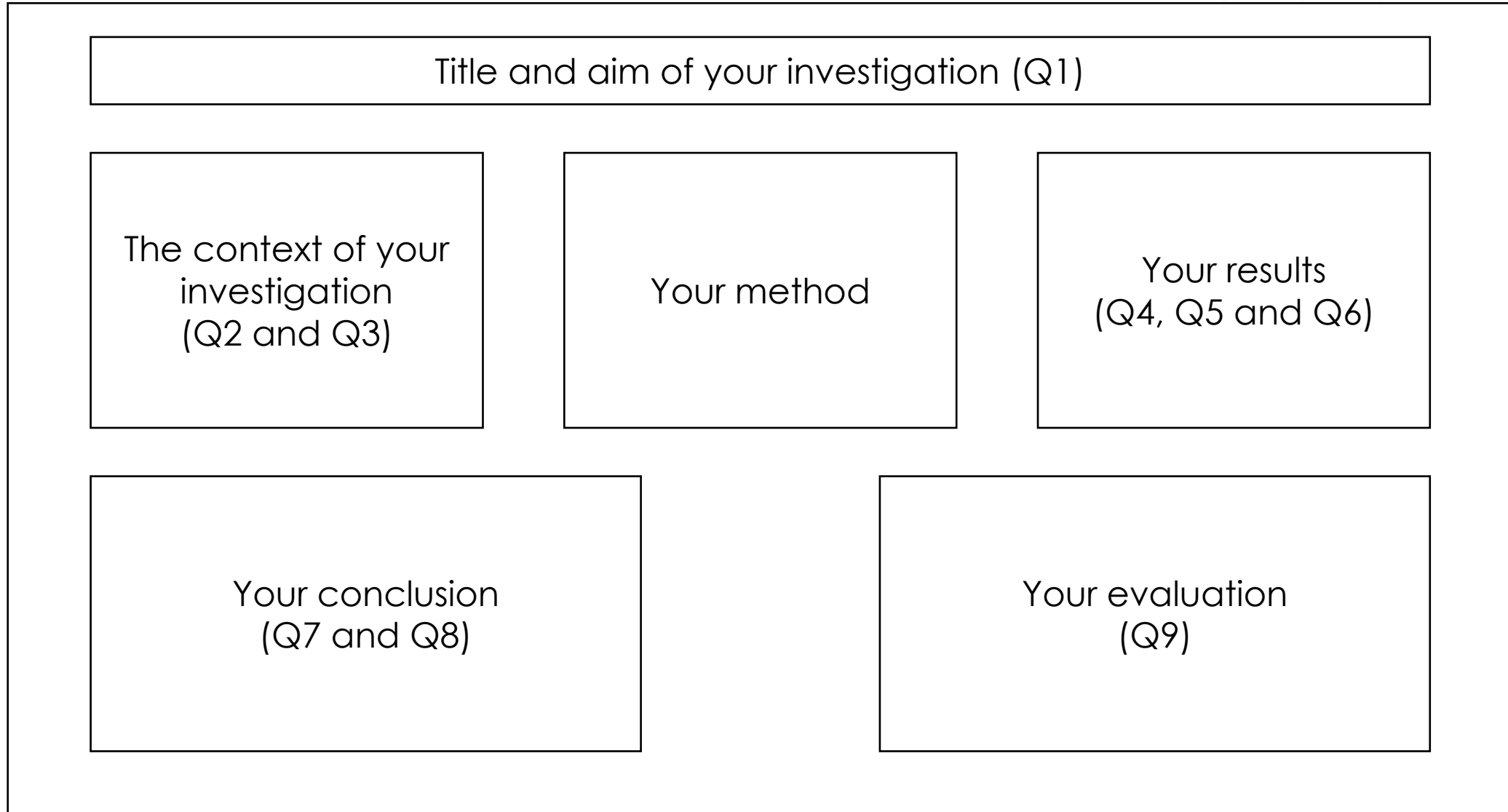
Your method

Your results
(Q4, Q5 and Q6)

Your conclusion
(Q7)



Poster layout 2





Poster layout 3

