Lesson 1: Mapping the Territory

Visualising Functional Group Interconversions

Mr Haynes

Gosford High School

Module 7: Organic Chemistry

Outline

Introduction: Why Map Reactions?

Focus Inquiry Question: How are different classes of organic compounds interconverted through reaction pathways?

- **Recap Quiz:** (Teacher to ask 1-2 quick questions on recent reactions, e.g., alkene addition product, alkane substitution condition).
- Organic reactions don't exist in isolation – they form an **interconnected network**.
- Learning the connections is key to understanding organic chemistry and planning syntheses.
- **Today's Goal:** Learn to use a visual tool (Chord Diagram) to explore this reaction network based on what we've learned so far.

Understanding the Visualisation

This tool helps us see the "map" of organic reactions.

Key Features:

- **Nodes** (Outer Segments): Represent Functional Groups (e.g., Alkane, Alkene, Alcohol).
- **Chords** (Inner Bands): Represent Reactions linking functional groups.
- **Colour Coding:** Indicates Reaction Type (Check legend/checkboxes - e.g., Addition, Substitution).
- **Hover/Click:** Reveals details for a specific reaction (Reagents, Conditions).
- **Filtering:** Checkboxes allow focusing on specific reaction types.

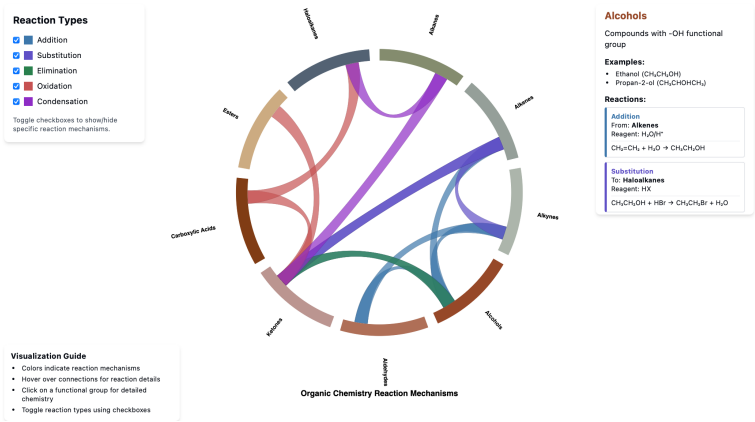

Figure: Chord Diagram Example

Using the Tool for Known Reactions

Now, let's use the tool to map out the reactions we've already covered.
Activity Prep (Refer to Activity Sheet 1 / Worksheet 1):

- Access the Chord Diagram tool on your device.
- **Your Task:** Use the tool to find the connections between Alkanes, Alkenes, Haloalkanes, and Alcohols.
- For each connection (reaction):
  - Identify the reaction type (using colour/filter).
  - Find the reagents/conditions (using hover).
  - Record your findings on Worksheet 1.
- **Focus:** Connecting the visual map to the reactions you already know.

(Teacher circulates to assist with tool usage and understanding)

Mapping the Territory: Key Takeaways

- Organic reactions form an interconnected network or "map".
- The Chord Diagram tool helps visualise this network:
  - Nodes = Functional Groups
  - Chords = Reactions (coloured by type)
  - Hover = Reagents/Conditions
- This tool helps organise our knowledge and see the bigger picture.

Next Steps:

- Complete Worksheet 1.
- Complete Exit Ticket (check tool interpretation).
- **Preview Lesson 2:** Using the map to plan short synthesis pathways (connecting reactions).

Thank you!

Questions?