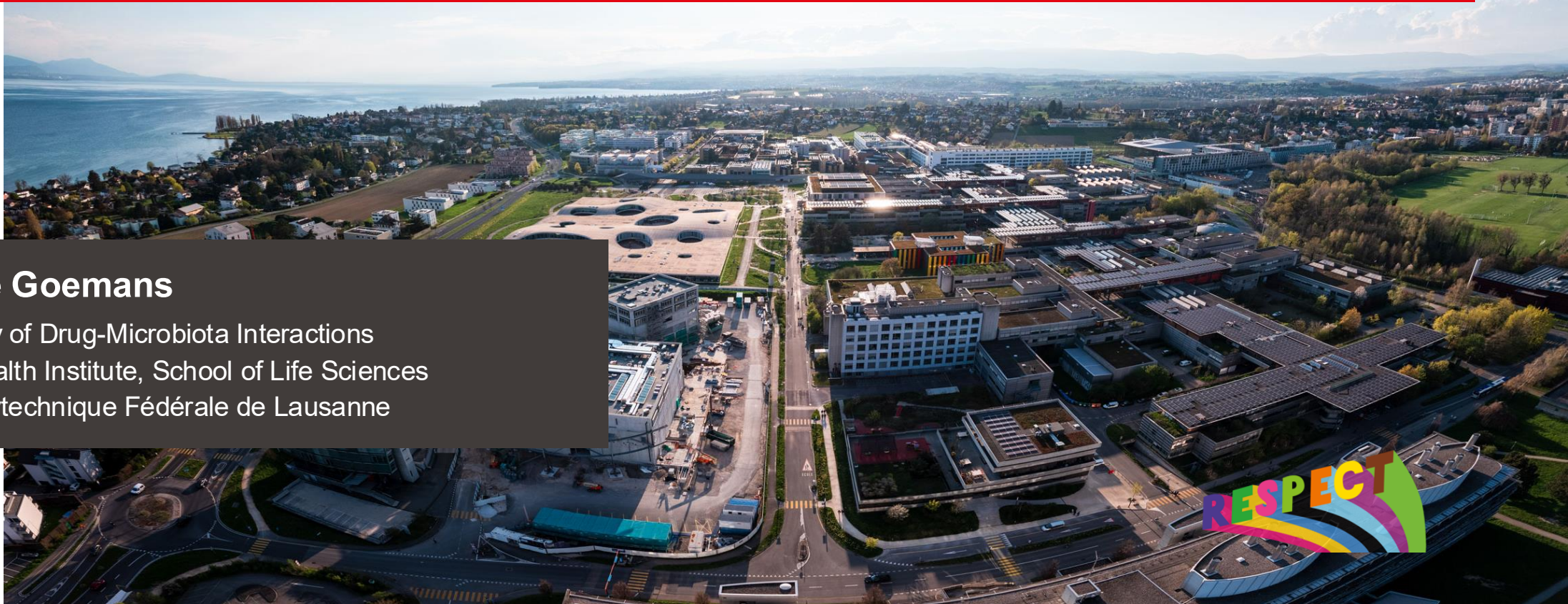


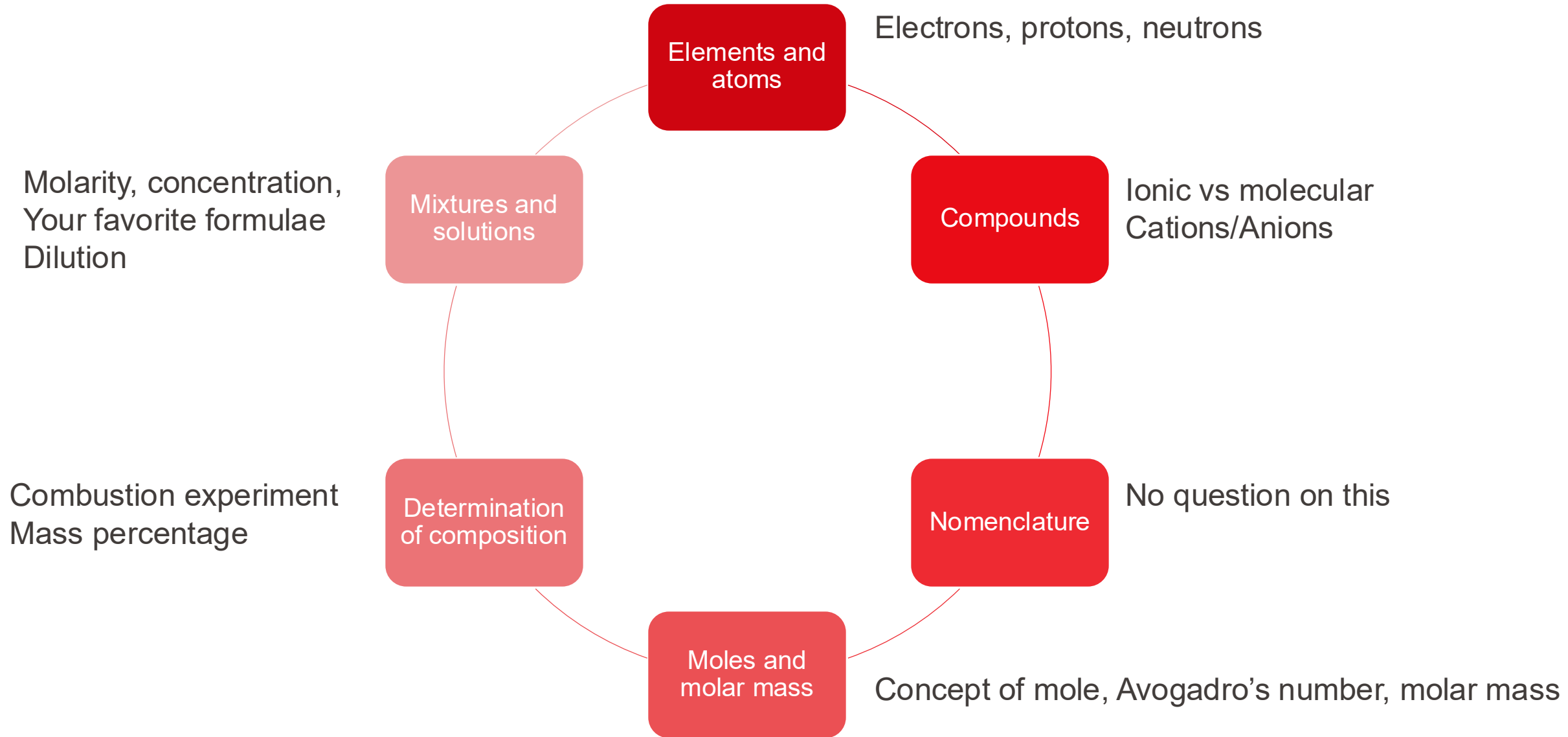
# General Chemistry – Recap Part I

**Camille Goemans**

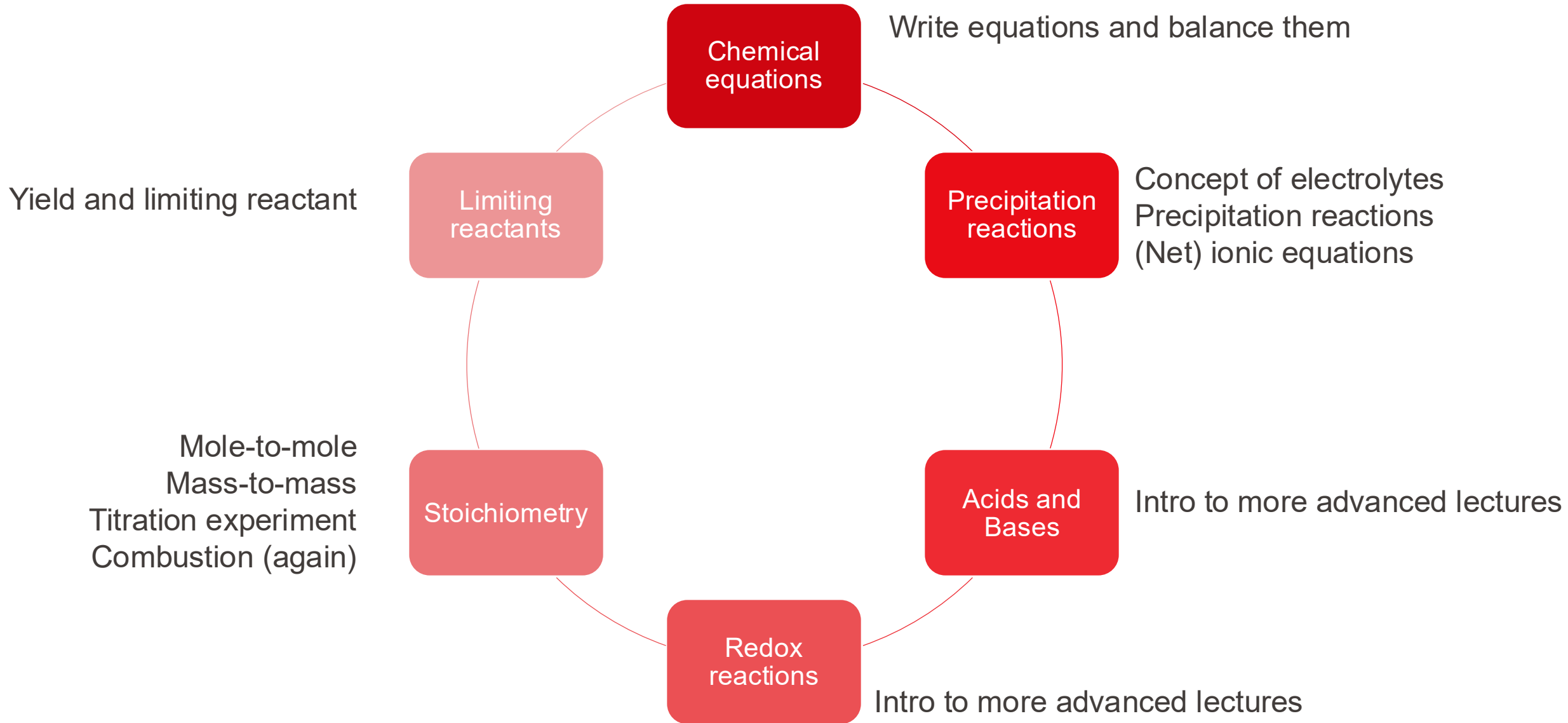
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# Lecture 1



# Lecture 2



# Lecture 3 – the model of the atom

- No historical theory
- 4 quantum numbers (shells, subshells, orbitals and spin)
  - How many
  - How they are called
  - How many electrons they host
  - ...
  - No need to know the shapes of the orbitals beyond the p subshell
- Electronic configuration of atoms and ions
  - Rule: Pauli exclusion principle
  - Rule: Aufbau principle
  - Rule: Hund rule (max parallel spins); each p orbital gets an electron first
- Concept of ground state vs. excited state
- Concept of valence and filled shell
- *Periodic trends: Intro to more advanced lectures*

# Lecture 4 – bonds between atoms

- Ionic, covalent, metallic bonds, polarity, electronegativity
- Lewis representation for ionic bonds and covalent bonds; single/double/triple bonds; octet rule
- Geometric representation (VSEPR): rules to draw it; molecular vs electron arrangement; consequences for polarity
- Quantum approach: sigma bonds, pi bonds, electron promotion and orbital hybridization (for some atoms!)

# Some atoms sometimes undergo orbitals hybridization

- Orbital hybridization is important for **C, N, O, B, Be, P, S**, and **transition metals** when they form covalent bonds. It is **not universal** but is most useful for **atoms that need specific molecular geometries**.

Have a nice exam prep! See you next semester in Biologie Générale (yay!)

