This is the first video from the second ice day spring 2023. It covers use of the term "aminal" in the imine formation mechanism, as well as a twist on the reaction called reductive animation that produces an amine product in one step.

<https://youtu.be/6eGC8PVXx4o>

This is the second video from the second ice day, spring 2023. It covers the keto-enol formation mechanism, catalyzed by both acid and base. This also describes how these processes convert the “personality” of carbonyl groups from an electrophile (keto form) to a weak nucleophile (enol) or a strong nucleophile (enolate intermediate). This also explains the special reactivity of carbonyls at the alpha carbon and why the alpha hydrogen is acidic.

This is the third video from the second ice day, spring 2023. It covers the alpha-halogenation reaction mechanism of ketones and aldehydes that involves an enol intermediate in the key bond-making step. The end of the video shows how to use this reaction in a synthesis involving the Wittig reaction.

This is the fourth and final video from the second ice day, spring 2023. It covers a general introduction to carboxylic acids including their dimerization in solution, their acidity, how to think about relative acidity more generally (relative anion stability, resonance, inductive effect), how to understand the protonation state of an acid at a given pH and thus why in biochemistry, carboxylic acids are deprotonated and therefore negatively-charged at neutral pH.

This is the first video from the first ice day spring 2023. It covers how vision works, reviews terpenes and explains the surprising fact that mammalian vision depends on molecules from plants that we eat in our diet.

This is the second video from the first ice day spring 2023. It covers geminal diol formation and why this was important for chromic acid oxidation (Jones reagent) of alcohols mechanism we learned last semester. The fact that aldehydes are oxidized to carboxylic acids by chromic acid is emphasized.

This is the third video from the first ice day spring 2023. It covers the Wolff-Kishner reduction of aldehydes and ketones using hydrazine (NH2-NH2) and base to give a -CH2- group. The reaction involves some surprisingly stabilized intermediates and is driven to completion by loss of the N2 (gas) molecule! The reaction “bites the O atom clean off”, so it is easy to remember as a “scary” one!

Ths is the fourth and final video from the first ice day spring 2023. It covers how to think about the oxidation and reduction reactions of aldehydes and ketones, and how these can be used in multi-step synthesis to construct larger, more complex molecules from multiple rounds of bond-forming steps.