Chiral Pool Party!

Sorry about that pun^....

For an excellent (and long) recent review of the utility of starting materials from the chiral pool in the synthesis of natural products from the Maimone group see Chem. Rev. 2017, 117, 11753-11795.

1. The Sarpong group recently published an enantiospecific synthesis of decalin 1, which can serve as a versatile entry point to a variety of natural product skeletons, from carvone (J. Org. Chem. 2019, 84, 12209–12215). Propose your own route to 1.

2. Sarpong and coworkers also recently developed a synthesis of (−)-Xishacorene B from (R)-Carvone using a C–C activation strategy (J. Am. Chem. Soc. 2018, 140, 9810–9813). Propose a mechanism for the conversion of carvone to cyclobutanol 2 and the conversion of 2 to enone 3, the key intermediate for the generation of the [3.3.1] bicycle found in (−)-Xishacorene B. Hint: for part 2, think about β-hydride elimination, but instead of a C–H bond...

4. The key transformation in the synthesis is a cyclization cascade that generates the B and D rings of perseanol in a single step. Propose a mechanism for the following reaction.

![Synthesis reaction diagram](image)

5. Maimone recently published a unified chiral-pool-based synthetic strategy for accessing a number of members of the Guaiianolide sesquiterpenes (*J. Am. Chem. Soc.* 2019, 141, 14904–14915). The synthesis of a key intermediate is shown below. Discuss the sequence and provide mechanisms for transformations of interest.

![Reaction sequence](image)

6. Maimone’s general synthetic strategy is depicted below. Using this strategy, propose a rough outline for the synthesis of mikanokryptin.