**Lesson 11 Exercises**

1. The following questions use Figure S6.3.
   1. By comparing the Yamnaya and Corded\_Ware\_LN ADMIXTURE graph (you should take the geographic distribution and age into account), what hypothesis will you propose?
   2. By comparing Corded\_Ware\_LN and individuals that are dated just a bit earlier than Corded\_Ware\_LN, but geographically close, (e.g., HungaryGamba\_CA), what hypothesis will you propose?
   3. By comparing Corded\_Ware\_LN and Bell\_Beaker\_LN, what hypothesis will you propose?
   4. By examining the ADMIXTURE graph of Yamnaya individuals, it seems to be a combination of the blue and sea green component. To figure out the origin of the Yamnaya, we need to understand what these components are. The blue component is maximized in hunter-gatherers from the West, so are they related? Looking at the ADMIXTURE graph, what can you learn about the sea green component?
2. Automate admixture plotting
   1. Files
      1. Admixture results in ‘/public/adna/student/2018class/hongru\_wang/admixture/’, plot for K=2-5
      2. Finished graph is something similar to the example ‘lipson2018.admixture.pdf’
   2. Software
      1. Based on Rscript ‘admixture\_barplot.R’
      2. Use Pong: <https://github.com/ramachandran-lab/pong>
      3. Other software you may find on the internet.
   3. Requirements
      1. Multiple K in one page
      2. Fix label
      3. Color for one population should not change