Ultimately, we would like to design proteins to perform a useful function. In the early years of protein design, the idea of designing for ‘function’ was nebulous. In these papers, the authors have found creative ways to use design algorithms to accomplish some sort of function.

We will not cover all articles, so please choose those of most interest to you. You may work in a group of two if you choose two articles to present together (which can be fun to compare and contrast). Bring a few slides for the class discussion; most journals allow you to directly download the figures. Limit your presentation to 8-10 minutes. Be sure to be able to answer the following questions:

1. What is (are) the authors’ design goal(s)? In particular, what function would this protein accomplish?
2. If the design strategy is successful, what is the impact of this kind of molecule? That is, what applications, therapies, new tools or new technologies are enabled by this work?
3. How do the authors translate their functional goal into a structural design goal, i.e., what is the computational strategy used to enable this approach to achieve a particular function? Part of this question includes noting the design search algorithm and scoring function, but in most cases there are additional meta-algorithms constructed around the usual design calculation.
4. How do they validate their design experimentally?
5. Did they meet their design goal?
6. Do you believe they met their design goal? Consider carefully the experimental data presented.
7. How reliable is the technique? I.e., do all the designs work?
8. How is this work important in the field? You may need to learn about the other articles in class to answer this.

**Seminal articles in the design of protein function**