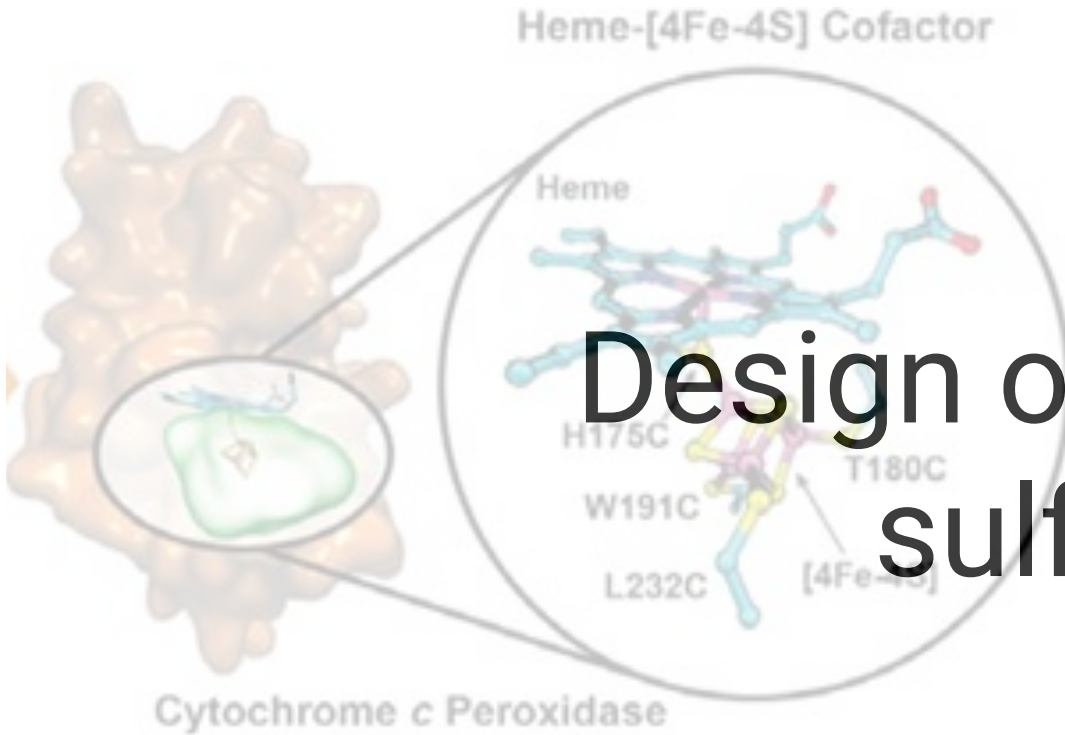


# Class core values

1. Be **respectful** to yourself and others
2. Be **confident** and believe in yourself
3. Always do your **best**
4. Be **cooperative**
5. Be **creative**
6. Have **fun**
7. Be **patient** with yourself while you learn
8. Don't be shy to **ask "stupid" questions**

Week 3, Lecture 1

# Design of a functional sulfite reductase



# Learning Objectives

1. Critically evaluate literature on rational design
2. Practice an elevator pitch of your proposal idea
3. Give and receive critical feedback
4. Refine your proposal idea based on feedback received

# A designed heme-[4Fe-4S] metalloenzyme catalyzes sulfite reduction like the native enzyme

EVAN N. MIRTS , IGOR D. PETRIK , PARISA HOSSEINZADEH , MARK J. NILGES, AND , YI LU  [Authors Info & Affiliations](#)

## Metals brought together do more

Enzymatic reduction of oxyanions such as sulfite ( $\text{SO}_3^{2-}$ ) requires the delivery of multiple electrons and protons, a feat accomplished by cofactors tailored for catalysis and electron transport. Replicating this strategy in protein scaffolds may expand the range of enzymes that can be designed de novo. Mirts *et al.* selected a scaffold protein containing a natural heme cofactor and then engineered a cavity suitable for binding a second cofactor—an iron-sulfur cluster (see the Perspective by Lancaster). The resulting designed enzyme was optimized through rational mutation into a catalyst with spectral characteristics and activity similar to that of natural sulfite reductases.

*Science*, this issue p. 1098; see also p. 1071

# Giving feedback

1. Know what the goal is (Today: Feedback to classmates about proposal)
  - a. **What:** Is the goal clear? Are there measures of success?
  - b. **Why:** Does it make sense? What population it'll help? Who cares about this?
  - c. **How:** Is it realistic? Can it be done? What potential ways can they take to achieve the goal

# Giving feedback

1. Know what the goal is (Today: Feedback to classmates about proposal)
2. Time and manner of delivery
  - a. For today, after they're done with their pitch
  - b. Start with what they did well
  - c. Be clear. Take notes and be specific
  - d. Frame as a question first. Maybe you missed something
  - e. Don't decide for them. Suggest changes, don't order changes

# Giving feedback

1. Know what the goal is (Today: Feedback to classmates about proposal)
2. Delivery
3. Tone
  - a. Constructive feedback to help make something better, not judging the person
  - b. Be mindful of sounding like you're attacking
  - c. Acknowledge their effort

# Receiving feedback

1. Acknowledging that everyone needs feedback
  - a. Think about feedback as a way to improve your proposal
  - b. Different perspectives can make your proposal better
  - c. Take notes
  - d. Show appreciation of the feedback



# Receiving feedback

1. Acknowledging that everyone needs feedback
2. What to take away
  - a. Don't take it personal
  - b. Remember that you don't have to make all the changes suggestions
  - c. If something doesn't sound clear, ask questions

# Receiving feedback

1. Acknowledging that everyone needs feedback
2. What to take away
3. Be proactive
  - a. If there are specific areas you have question about or want feedback on, tell them in advance
  - b. Be aware of your personal reactions. Practice listening silently and taking notes.
  - c. Use this opportunity to reflect on your work. Don't argue why you're right

# For the next lecture:

1. Pre-class assessment for the next lecture  
Needs to be done before the start of class, will be available after this class
2. Post-class assignment  
None!
3. Update your proposals based on the feedback (no need to submit, but if you wish to send to me, let me know so that I can review that one)

Next lecture:  
*Evolving proteins in a test tube*

