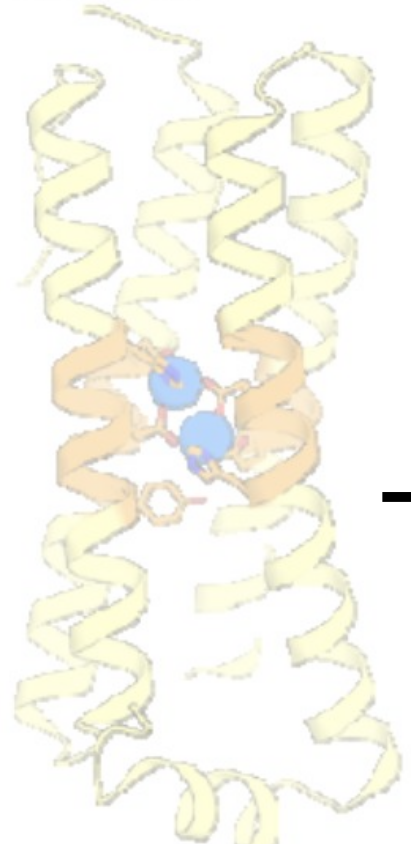
Class core values

1. Be **respect**ful 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 8, Lecture 2

The fantastic world of ML

Learning Objectives

1. Critically evaluate literature in the field of machine learning applications in protein engineering
2. Develop strategies for keeping up with the fast pace of AI

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I want to learn ML/DL. Where to start

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1. Learn python!

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2. Take a class
    a. Linear algebra
    b. Data science
    c. Stats
    d. Deep learning/machine learning

I want to learn ML/DL. Where to start

1. Learn python!
2. Take a class
3. Take online courses
   a. Andrew Ng's machine learning course
   b. Andrew Ng's deep learning specialization course
   c. Convolutional neural net lecture collections
   d. Stanford graph neural net lecture

I want to learn ML/DL. Where to start

1. Learn python!
2. Take a class
3. Take online courses
4. Read books
   a. Deep learning with python (available in University's library. Currently in my lab)
   b. Hands-on machine learning with scikit-learn, keras and tensorflow (I have a copy)
   c. Deep learning by Goodfellow (freely available, more advanced)

I want to learn ML/DL. Where to start

1. Learn python!
2. Take a class
3. Take online courses
4. Read books
5. Take advantage of videos and weblogs
    a. 3Blue1Brown
    b. Towards Data Science, Machine learning
    c. Medium, Machine learning

Where do I find papers?

Where do I find papers?

1. Add relevant search terms to your feed
    a. Google Scholars
    b. NCBI
    c. Feedly

Where do I find papers?

1. Add relevant search topics to your paper search
2. Write down name of authors whose work you find interesting
    a. Follow them on twitter
    b. Follow them on google scholar
    c. Add them to your NCBI search
    d. Add them to your feedly

Where do I find papers?

1. Add relevant search topics to your paper search
2. Write down name of authors whose work you find interesting
3. Find names of active people in the field and add them to your twitter
    a. Sergey Ovchinnikov (@sokrypton)
    b. Kevin Yang (@KevinKaichuang)
    c. Mohammed AlQuraishi (@MoAlQuraishi)

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    a. Kevin Yang's compilation of ML papers for proteins

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4. Find places where you can find resources from
   a. Kevin Yang's compilation of ML papers for proteins
5. Attend conferences (NeurIPs, …)

What’s good?

What’s good?

1. Check what’s been discussed
2. Have an expert you trust
3. Talk to people
4. Get a sense of the papers quickly from abstract/figures
5. Be critical: check for controls, comparisons, and metrics they used
6. Check their github pages and ask questions

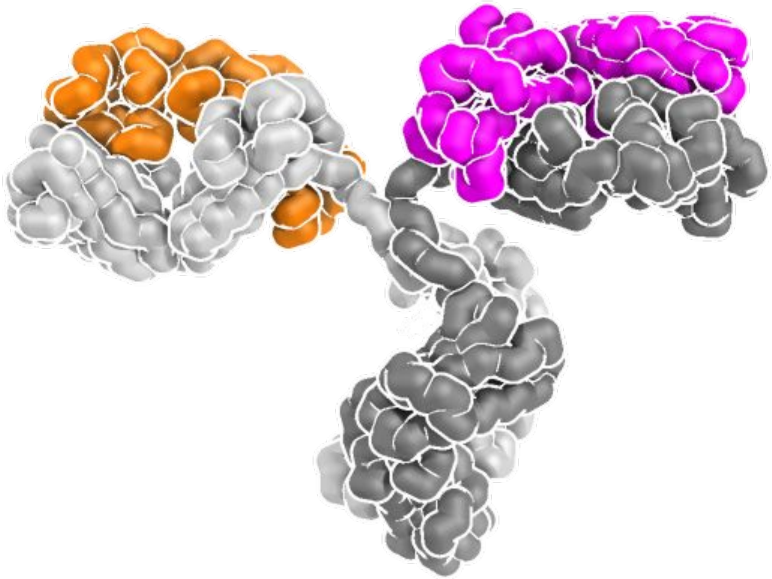
For the next lecture:

1. Start writing your final specific aims (methods will be later)

2. Write questions for our entrepreneur guest, Dr. Silva

Next lecture:

Antibodies – a case study



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