

- Announcements
- Lab Practical (~40 min)
- Pre-lab Lecture
  - ❖ Module 1 Overview
  - ❖ PCR
  - ❖ Module 1 Assignments
  - ❖ Today in Lab: M1D1

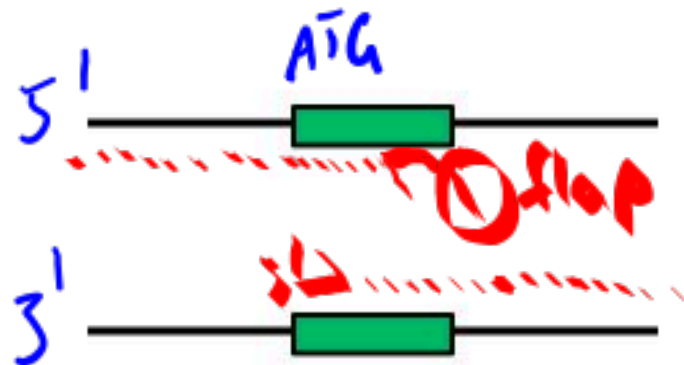
# Announcements

- Printers/recycling/scrap paper
- BE (and other) seminar series:
  - Seminar posters across from BE HQ on 3<sup>rd</sup> floor
  - Full schedule linked from BE website
  - Part of professional development
- Introducing... Carrie, your TA for Module 1

# Module 1 Overview

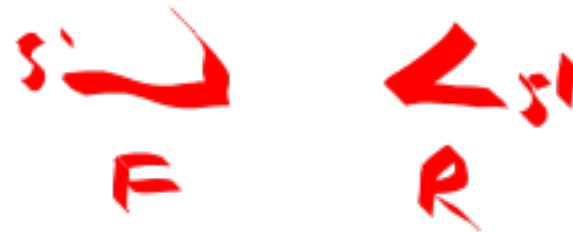
- What is an RNA aptamer?  
RNA sequence/structure that binds a specific target
- What will we do with them?  
study selection/enrichment conditions  
for a heme-binding aptamer
- Why should we care?  
many uses- from probing systems to therapeutics

# Designing PCR primers



coding

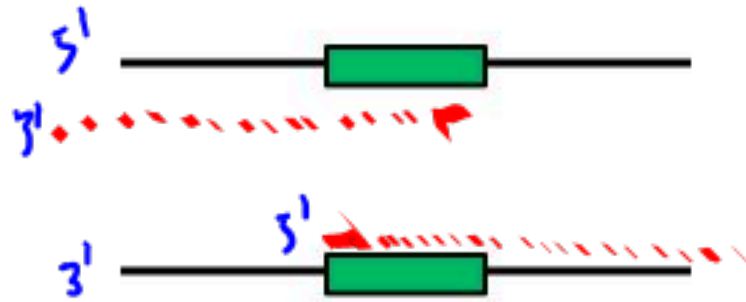
primers



flap: different sequence for  
adding function

- linker
- restriction enzyme site

# PCR Process



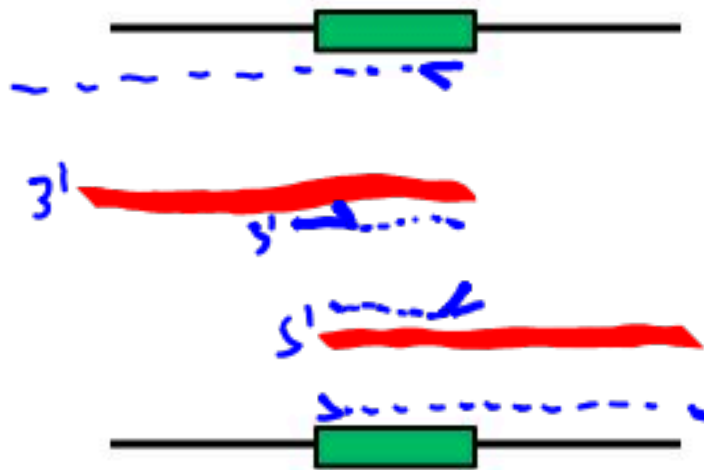
MAE 1  
←

Melt ~95°C

Anneal ~50's-60's °C

Extend ~72°C


↓ MAE 2



MAE 3  
→

100  
1000  
= goal

# PCR reaction

Component	Function
primers	select and initiate new DNA strands
DNA polymerase (Taq)	catalyze DNA extension
dNTPs	building blocks for new DNA
template	Provides sequence to copy
buffer; $Mg^{2+}$  co-factor for enzyme	Provide right chem. environment

# Mod 1 Written Assignments

- Lab report (15%)
  - Traditional format (intro, methods, etc.)
  - Can be revised
  - WAC training begins next time
- Computational assignment (5%)
  - Practice with three online tools
  - Short-answer questions and figures
  - Not subject to revision

# Mod 1 Oral Assignment

- Journal club (10%)
  - Purpose: summarize a recent research article
  - Sign up for Day 6 (Feb 24/25) or Day 8 (Mar 3/4)
  - Revised paper list available next week
- Preparation
  - WAC training will be on Day 3 (Feb 10/11)
  - Will also practice discussing an article in-class on Day 3: start reading the paper this weekend
- Presentations will be videotaped, reviewed



# Participation self-assessment

- Hand in a short piece at end of each module
  - Opportunity for reflection
  - Holistic view of your contributions
  - Relatively informal w/r/t writing itself
  - Can mention “above-and-beyond” work, ways you learned from both success and failure, etc.
- For example of style, see *Lessons from year X* pieces on my user page

# Today in Lab: M1D1

- Set up PCR of “mock” library:
  - 6-5 (non-binder) and 8-12 (heme aptamer)
  - Change pipet tips between samples, primers, etc.
  - Keep PCR tubes cold!
  - Write small *directly* on the PCR tubes – do not put sticky labels in the PCR machine.
- Computational exercises
  - Primer analysis → required
  - Sequence alignment → start on M1 assignment