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

Announcements

- BE (and other) seminar series:
  - Seminar posters across from BE HQ on 3rd floor
  - Full schedule linked from BE website
  - Part of professional development
  - Today: on angiogenesis and cancer, 4:05 pm

- Introducing… Christina, 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?

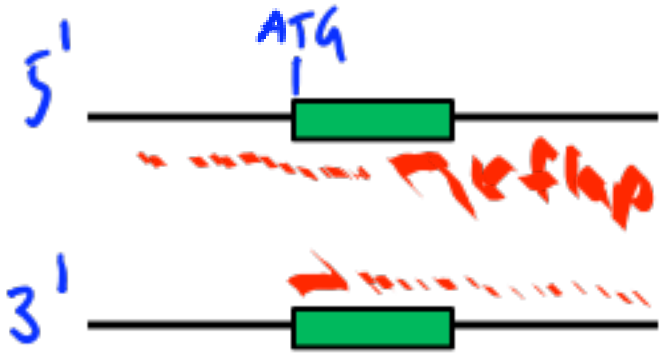
  study selection/enrichment conditions

  for a heme-binding aptamer

- Why should we care?

  many uses- from probing natural systems to therapeutics

Designing PCR primers

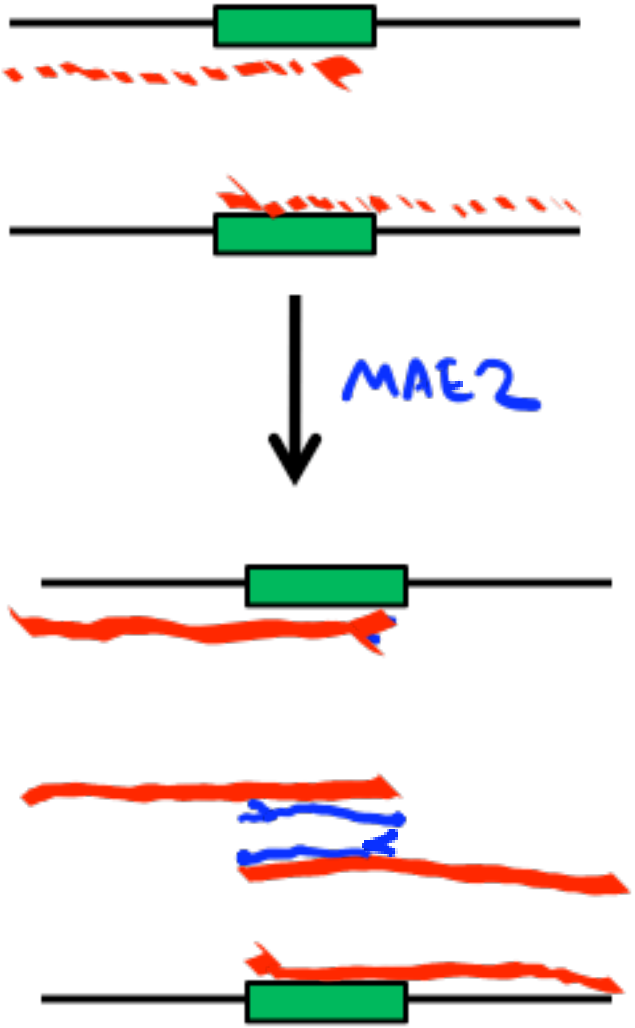


coding strand

primers 5' → ←
F R

flap useful for adding sequence w/addn'l functions

PCR Process



MAE 1

MAE2

Melt → ~95°C

Annial → 50's-60's

Extend → 72°C

depends on Tm of primers
5°C below Tm

— too long

— desired product

PCR Reaction

Component	Function
primers	select and initiate of new DNA strands
DNA polymerase (Taq)	catalyzes DNA elongation
dNTPs	make up the new DNA
template	provides desired sequences
buffer : Mg^{++} co-factor	provide needed 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 25/26) or Day 8 (Mar 4/5)
  - Paper list available next Monday
- Preparation
  - Practice discussing an article in-class on Day 3: start reading the paper this weekend
  - WAC training will be on Day 5 (Feb 23/24)
- Presentations will be videotaped, reviewed

Participation self-assessment

- Hand in at end of each module
  - Opportunity for reflection
  - Holistic view of your contributions

	• I missed more than one lecture.	<=5 _____
Participating in pre-lab lecture	• I was attentive and made regular contributions during (all or nearly all) pre-lab lectures. • I mostly paid attention, but rarely (8) or never (7) actively participated in lecture. • I was late and disrupted lecture more than once.	10 7 or 8 <=5 _____
Lab community contributions	• My group posted our clearly labeled data to the *Talk* pages in a timely fashion. • During journal article discussions in class, I was prepared and substantially participated. • After journal club or oral proposal talks, I asked questions of my peers.	<=10, depending on extent of contributions: _____
Other (above	• I investigated and shared some interesting research	Up to 4 pts.

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