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

Announcements

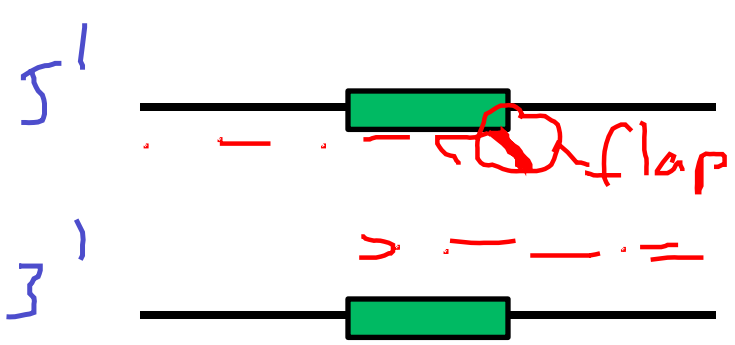
- BE (and other) seminar series:
  - Seminar posters across from BE HQ on 3rd floor
  - Full schedule linked from BE website
  - Part of professional development

- Introducing… Jacob, your TA for Module 1

Module 1 overview

- What is an RNA aptamer?
  RNA sequence/structure that binds a target
- What will we do with them?
  study selection/enrichment conditions for some binder (broader implications)
- Why should we care?
  many uses — from probing system to therapeutics. want these processes to be efficient and effective.

Designing PCR primers



coding / sense

template / α-sense

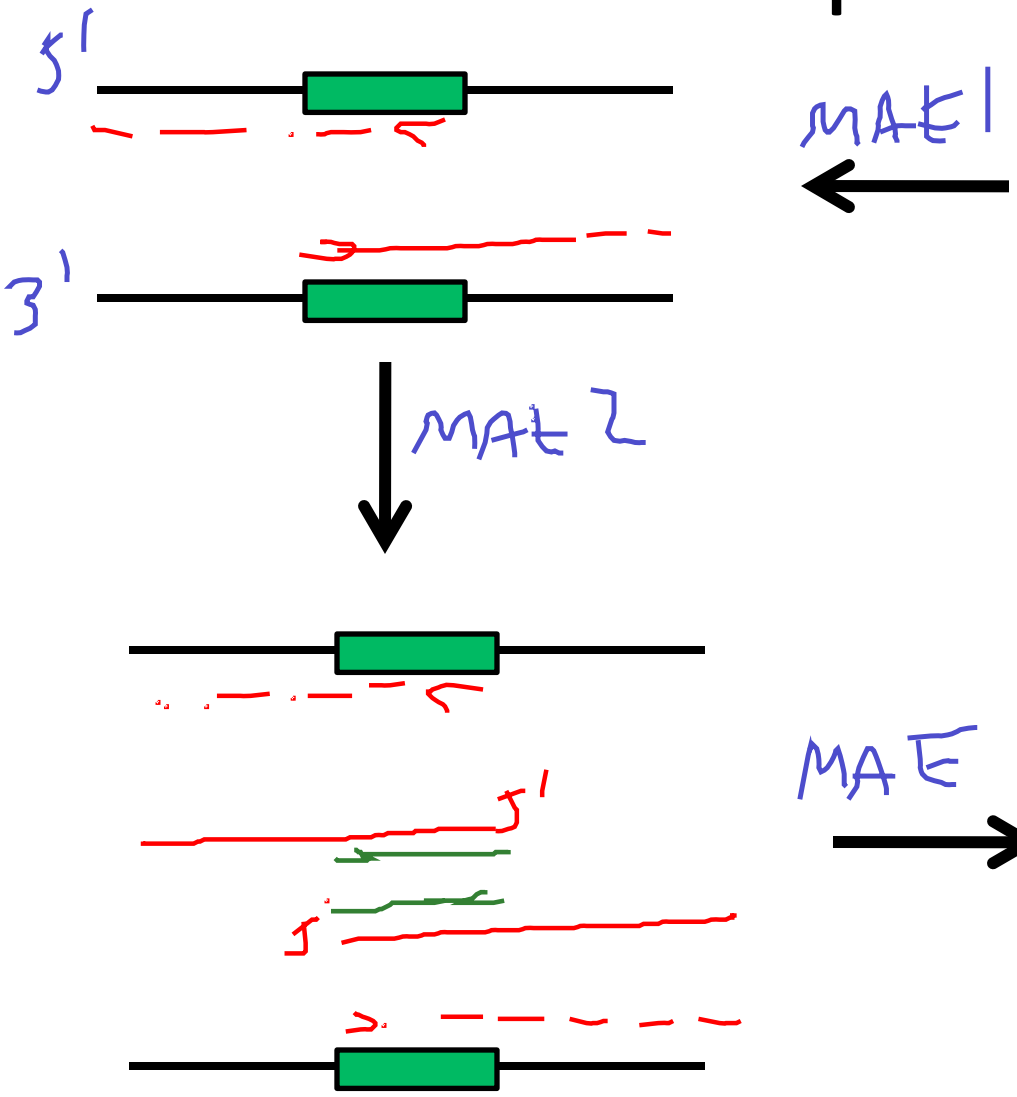
primers

5' → F

← 5' R

flap: unique sequence
to add function
- restriction site
- linker

PCR process



Melt ~95°C

Anneal ~50's-60's °C
(more next time!)

Extend ~68-72°C

two long (few)

= goal sequence (lots 2^n)

PCR eaction

Component	Function
primer	select and initiate new DNA strands
DNA polymorase (Taq)	catalyzes DNA extension
dNTPs	building blocks for new DNA
template	Sequence to copy
buffer, Mg^{2++} cofactor for Taq	right chem. environment

Mod 1 written assignments

- Lab report (15%)
  - Traditional format (intro, methods, etc.)
  - Can be revised for up to 1.33 letter grade higher
  - WAC training begins today and 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 (Mar 1/2) or Day 8 (Mar 8/9)
  - Revised paper list available soon
- Preparation
  - WAC training will be on Day 3 (Feb 16/17)
  - Will also practice discussing an article in-class on Day 3: start reading the paper this weekend
- Presentations will be videotaped, reviewed

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
- Writing tutor talk on revision ~4:30-5