I HEART STEM - Strategy

Current plan (~45 minutes):

1. Introduce ourselves (2-3 min)
2. Start with a brief video on luminescence (the first two minutes of this video: <https://www.youtube.com/watch?v=-h79qFs-dEY>) (2 min)
3. Talk about how bioluminescence is created - luciferin and luciferase (Emily, 2-5 min)
   1. Brief intro into enzymes?
4. Show them sea firefly luminescence (3 min)
   1. Bring tubes with ~5 ostracods in each and add water to each tube at the time of the demo
5. Ask the students what bioluminescence might be used for (think, pair, share, 2-4 min)
   1. Possible answers: Attract mates, warn predators, attract prey, camouflage, defense
   2. What do many of these have in common? They are forms of communication!
6. Communication with Bioluminescence in many animals (Joie, 5-8 min)
7. Introduce ostracods briefly (Jessica, 5 min)
   1. Show a couple of ostracod pictures and talk a bit about what they are
   2. Talk about a group that has evolved bioluminescence
   3. Show the defensive display video
   4. Briefly introduce the idea of using luminescence for courtship
8. Luminescent communication activity
   1. Explain activity and demo (2 min)
      1. Make sure to describe the card in detail
      2. Tell them not to show any one else their card
   2. Hand out card 1 - all students start with all the same display but with different partner codes (1 min)
   3. Briefly discuss why no one had any success finding their partner and discuss signals. Show ostracod figure. (4-5 min)
   4. Show video
   5. Hand out card 2 - second display is slightly different (1-2 min)
   6. How successful were you? What could you do better to find your partner? What are some other ways they could modify the display? (3-5 min)
   7. Finally, let them create their own display with their partner, then draw a display/partner out of a hat. (2-3 min)
   8. Try finding your partner (1-2 min)
9. Discussion (9 min)
   1. Speciation and diversification in ostracods, mostly focused on how evolution can use similar mechanics to create species with different displays (4 min)
10. Panel discussion (until the end)

EXTRAS:

1. This TED talk gives examples of different forms of luminescence: <https://www.youtube.com/watch?v=oKjFVBVGad0&t=136s>