* Drake Equation
  + # of tech int civs = rate of star formation \* fraction of stars having planetary systems \* avg # of habitable planets w/in the system \* fraction of habitable planets on which life could arise \* fraction of those planets having intelligent life evolve \* fraction of those with tech \* avg lifetime of tech competent civ
    - = 10 \* 1 \* 1/10 \* 1 \* 1 \* 1
  + Number of technological intelligent civilisations now present in the milky way = average lifetime of a technologically competent civilisation in years (i.e. if advanced civs survive for 1000 yrs, then there should be 1000 of them scattered in the galaxy)
* Likelihood of life’s emergence
  + Exoplanets
    - Trappist Star System
  + Extremophiles
    - Even the vacuum of space is suitable for life formation (Urey-Miller experiment in SPACE, conducted by NASA, I’ll try to find a source for this that isn’t just my notes)
* How do we look for them now? What are issues with this approach?
  + Sent out a plaque on the *pioneer 10* spacecraft showing a scale drawing of a human male and female + depiction of solar system + H atom undergoing change in energy
    - How will the life forms who get this be able to interpret this?
  + Radio
    - Best for long range space travel; little distortion and scattering that short wavelength radiation experiences. Also cheap and convenient.
    - The “water hole” - region in radio range of EM spectrum where natural galactic emissions are minimal
    - But how do receivers distinguish bw artificially produced signals from naturally emitted ones?
    - How do others perceive the radio message from the noise all other areas of the Earth are emitting?
    - The time it takes for the transmission to get to a star + the time it’ll take to receive a response = too long for a human with an average lifespan
* Assuming our methods of detection are fine, what are some explanations to the paradox
  + Great filters
  + Active termination
  + Intelligence isn’t that important
  + We’re the first (someone has to be) (or the only ones i.e. unique)