**Introduction**

1. Evolvability is an important concept for understanding directions of morphological change through time
2. The modern quantification of evolvability is done using G matrices
   1. It is difficult to get the G matrix
   2. P matrix may substitute
      1. As proposed by Cheverud
   3. P has been examined in the past by Hunt, works!
   4. Still, don’t know how representative P is of G
      1. Cheetham and Porto et al showed pooled G works
   5. For those that have used G, did so in a phylo context, so no fossils
3. Want to know if G can change through time
   1. Why is this an important concept??
      1. How relate to tempo and mode?
      2. Expect to change in direction of Gmax or higher than average evolvability; if G didn’t change then maybe constraints
      3. In which direction in phenospace is evo easy to explore; so if it doesn’t explore
   2. To do so, need to be able to estimate G through time, which is difficult because don’t have known breeding populations millions of years ago
4. Also want to know if changes in P happen along same major axes of variation as G
   1. i.e., above average directions of evolvability
   2. What is G changing within, what is P changing within
   3. This is probably in the wrong spot, need ot figure out narrative
5. Can use bryozoans to address this!
   1. Clones, so all variation in P is due to E, not G
   2. Have a fossil record through time
   3. Specficially Steginoporella magnifica
      1. Simple system
6. Specifically, we ask:
   1. How well does P represent G?
   2. Does G change through time?
   3. Does P align with G max?
   4. Is P changing in directions of above average evolvability?