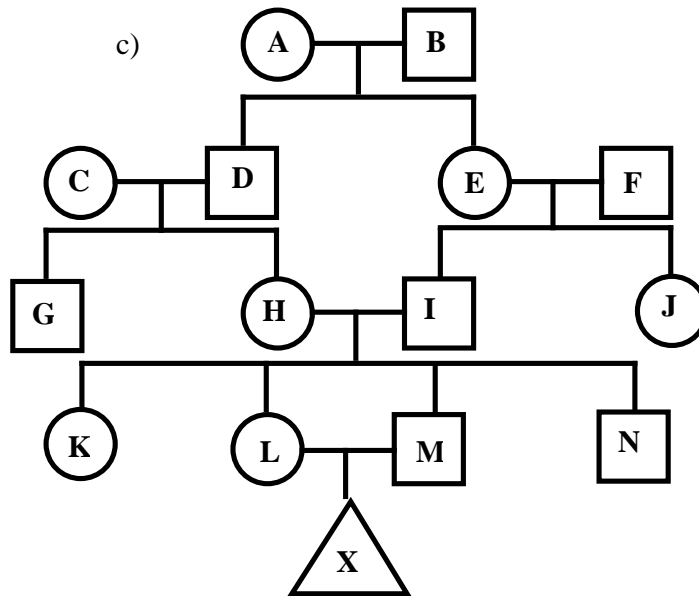
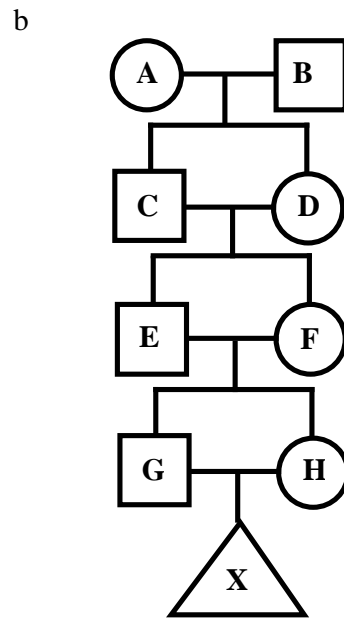
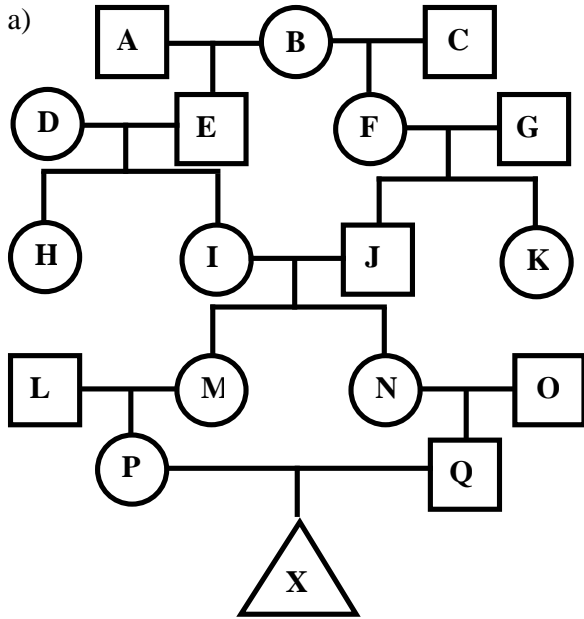


- 1) Included with this homework are genetic data from American oysters at 3 independent loci. Determine if these populations are in Hardy-Weinberg equilibrium for each locus. Estimate both overall and population pair wise  $F_{st}$  values for each locus and over all loci. If there is a significant overall locus/population  $F_{st}$ , use what you know about the geography of the collection distribution to determine where significant population subdivision might occur. Calculate Nei's genetic distance between all pairs of populations.
- 2) For the pedigrees below, calculate the inbreeding coefficient for individual X for both autosomal and sex linked genes. In your answer, include each path, indicate the common ancestor, and the contribution to the inbreeding coefficient for that path.



Theoretical Population Genetics

Home work #4

Fall 2000

Location	Sample	1	2	3
Cumberland GA 33	OY025	AA	AB	AB
	OY026	AA	AA	AB
	OY027	AB	AB	AB
	OY028	AA	AA	AB
	OY029	AA	AA	BB
	OY030	AA	AA	AB
	OY031	AA	BB	AB
	OY032	AA	AB	AB
	OY033	AA	AB	AB
	OY034	AA	AB	AA
	OY035	AA	AA	AB
	OY036	AA	BB	AB
	OY037	AA	AA	AB
	OY038	AA	AB	BB
	OY039	AA	AB	BB
	OY040	AA	AA	AB
	OY042	AA	AA	BB
	OY045	AA	AA	BB
	OY047	AA	AA	BB
	OY048	AA	AB	BB
	OY049	AA	AA	BB
	OY050	AA	AA	BB
	OY051	AA	AA	BB
	OY053	AA	AA	AA
	OY055	AA	BB	AA
	OY056	AA	BB	AB
	OY057	AA	AA	BB
	OY058	AA	AA	AB
	OY060	AB	AB	AB
	OY061	AA	AA	BB
	OY062	AB	AA	AA
	OY063	AA	AA	AB
	OY064	AA	AA	AA
Panacea, FL 39	OY097	BB	BB	AB
	OY098	BB	BB	BB
	OY100	BB	BB	BB
	OY101	AB	BB	BB
	OY105	BB	BB	BB
	OY108	BB	BB	BB
	OY110	BB	BB	BB
	OY118	BB	BB	BB
	OY122	AA	BB	BB
	OY126	BB	BB	BB

	OY127	AB	BB	BB
	OY128	BB	BB	BB
	OY129	AB	BB	BB
	OY130	BB	BB	BB
	OY131	BB	BB	BB
	OY132	AA	BB	BB
	OY133	AB	BB	BB
	OY134	AB	BB	AA
	OY135	AA	BB	AB
	OY136	AA	BB	BB
	OY137	BB	BB	BB
	OY138	BB	BB	BB
	OY139	AA	BB	BB
	OY140	BB	BB	AB
	OY141	BB	BB	BB
	OY143	AB	BB	BB
	OY144	AA	BB	BB
	OY146	AA	BB	BB
	OY147	AA	BB	AB
	OY149	AA	BB	AA
	OY150	AA	BB	AB
	OY500	AB	BB	AA
	OY501	AA	BB	BB
	OY502	BB	BB	BB
	OY503	BB	BB	BB
	OY504	BB	BB	BB
	OY505	BB	BB	BB
	OY506	AA	BB	AB
	OY507	AA	BB	BB
New Smyrna Beach, FL 30	OY188	AA	AA	AB
	OY189	AB	AA	AB
	OY190	AA	AA	BB
	OY191	AA	AB	BB
	OY192	AA	AA	AB
	OY193	AA	AB	AB
	OY194	AA	AA	AB
	OY195	AA	AA	AB
	OY196	AB	AA	AB
	OY197	AA	AA	AB
	OY198	AA	AA	AB
	OY199	AA	AB	BB
OY200	AA	AB	AB	

Theoretical Population Genetics

Home work #4

Fall 2000

	OY201	AA	AA	AB		OY341	BB	BB	BB
	OY202	AA	AA	AB					
	OY203	AA	AA	AB	Woodshole, MA 35	OY550	AA	AA	AA
	OY204	AA	BB	AB		OY551	AA	AB	AB
	OY205	AA	AA	AB		OY552	AA	BB	AB
	OY206	AA	AB	AB		OY553	AA	AA	AA
	OY210	AA	AA	AA		OY554	AA	AA	AB
	OY211	AA	AB	BB		OY555	AA	AB	AB
	OY212	AA	AA	AB		OY556	AA	AA	AB
	OY213	AA	BB	AB		OY557	AA	AA	AA
	OY214	AA	AA	AB		OY558	AA	AA	AB
	OY215	AA	AB	AB		OY559	AA	AB	BB
	OY216	AA	AA	AB		OY560	AB	AB	AA
	OY217	AA	AA	BB		OY561	AA	AA	AA
	OY220	AB	AA	BB		OY562	AA	BB	AA
	OY223	AA	AA	AB		OY563	AA	AA	AB
	OY224	AA	AB	AB		OY564	AA	AA	AB
						OY565	AA	AA	AA
						OY566	AA	AA	AB
Port Charlotte, FL 29	OY300	BB	BB	BB		OY567	AA	AA	AA
	OY301	BB	BB	BB		OY568	AA	AB	AB
	OY302	BB	BB	BB		OY569	AA	AB	AA
	OY303	BB	BB	BB		OY570	AA	AA	AA
	OY304	BB	BB	BB		OY571	AA	BB	AA
	OY305	BB	BB	BB		OY572	AA	AA	AB
	OY306	BB	BB	BB		OY573	AA	AA	AB
	OY307	BB	BB	BB	OY574	AA	AB	AB	
	OY308	BB	BB	BB	OY575	AA	AA	AB	
	OY309	BB	BB	AB	OY576	AA	AB	AB	
	OY310	BB	BB	BB	OY577	AA	AA	AB	
	OY311	BB	BB	BB	OY578	AA	AA	AB	
	OY312	BB	BB	BB	OY579	AA	AA	AB	
	OY313	BB	BB	BB	OY580	AA	AB	AB	
	OY314	BB	BB	AB	OY581	AA	AA	AA	
	OY315	BB	BB	BB	OY582	AA	AA	AB	
	OY316	BB	BB	BB	OY583	AA	AA	BB	
	OY317	BB	BB	AB	OY584	AA	AB	AB	
	OY318	AB	BB	BB					
	OY319	AB	BB	BB	Grand Is. LA 41	OY600	BB	BB	BB
OY321	BB	BB	BB	OY601		BB	BB	BB	
OY322	BB	BB	BB	OY602		BB	BB	BB	
OY323	AB	BB	BB	OY603		BB	BB	BB	
OY324	BB	BB	BB	OY604		BB	BB	BB	
OY334	BB	AB	BB	OY605		AA	BB	BB	
OY335	BB	AB	BB	OY606		BB	BB	BB	
OY336	BB	BB	BB	OY607		BB	BB	BB	
OY340	BB	BB	BB	OY608		AA	BB	BB	

Theoretical Population Genetics

Home work #4

Fall 2000

OY609	AA	BB	BB
OY610	BB	BB	BB
OY611	BB	BB	BB
OY612	BB	BB	BB
OY613	BB	BB	BB
OY614	BB	BB	BB
OY615	BB	BB	BB
OY616	BB	BB	BB
OY617	AB	BB	BB
OY618	AA	BB	BB
OY619	BB	BB	BB
OY620	AB	BB	BB
OY621	AA	BB	BB
OY622	AA	BB	BB
OY623	BB	BB	BB
OY624	BB	BB	BB
OY625	BB	BB	BB
OY626	BB	BB	BB

OY627	AB	BB	BB
OY628	AA	BB	BB
OY629	AA	BB	BB
OY630	BB	BB	BB
OY631	BB	BB	BB
OY632	BB	BB	BB
OY633	BB	BB	BB
OY634	AB	BB	BB
OY635	BB	BB	BB
OY636	AA	BB	BB
OY637	AA	BB	BB
OY638	AB	BB	BB
OY639	AB	BB	BB
OY640	BB	BB	BB
TOTAL	207	207	207