

Data Analyses for Population Genetic Studies

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Microsatellite Data –

- 1) Data Quality
 - Hardy-Weinberg equilibrium?
 - Linkage?
 - Genepop; Micro-Checker; FSTAT; Arlequin
- 2) Genetic Diversity
 - Heterozygosity
 - Allelic richness
 - Arlequin; FSTAT; Genepop; GENETIX; GDA; SPAGeDi
- 3) Genetic Structure
 - A priori groupings: F-statistics and genetic distances between populations
 - Arlequin; FSTAT; Genepop; GENETIX; GDA; SPAGeDi
 - Individual based analyses: Bayesian clustering algorithms, Assignment tests, etc.
 - Structure; Geneland; GeneClass; BAPS; NewHybrids; BayesAss+
- 4) Other – Demographic parameters, Migration rates, Divergence times
 - IM; LAMARC; Migrate; MSVAR; COLONISE

Mitochondrial Data –

- 1) Data Quality
 - Mitochondrial or Nuclear?
 - Species?
 - GenBank (<http://www.ncbi.nlm.nih.gov/>)
- 2) Genetic Diversity
 - Haplotype diversity
 - Nucleotide diversity
 - Arlequin; DnaSP; MEGA
- 3) Genetic Structure: F-statistics and genetic distances between populations
 - Arlequin; DnaSP; MEGA
- 4) Phylogenetic Analysis
 - Haplotype networks
 - TCS; Network
 - Parsimony, Maximum Likelihood, Bayesian Analysis
 - PAUP; Phylip; MrBayes; BEAST

5) Other – Demographic parameters, Migration rates, Divergence times
-- Arelquin; DnaSP; IM; LAMARC; Migrate; MEGA

[Exoffier, L. & Heckel, G. (2006) Computer programs for population genetics data analysis: a survival guide. *Nature* 7, 745-758.]