

Ecological Genomics Notes

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Info Update:

- Advantages in Seq tech.
- Range of applications:
 - WGS (whole genome sequencing)
 - RNAseq (sequencing RNA converted to cDNA)
 - Targeted capture seq. (string of probes mixed with sample, pulls immune related genes from org)
 - ChIPseq (chromatin immunoprecipitation seq, recognizes and antibody and pulls out all DNA bound)

Why one or the other?

Genetic variation

-phenotypes

number of samples

-population
-individual
-comparative studies
-model or not

Demographic history

Adaptive genetic variation

gene expression var.

length of reads

number of reads

distribution

Reads:

- short = 50bp
- long 100 bp, 150 bp, 300 bp (miseq)
- 10,000-60,000bp = SMRT

Single vs. paired end

- General library Prep. Workflow
- Sequencing-by-synthesis (SBS)
- Other Technologies
- Learning Activity

Human Genome Project (2001-2003)

-ABI - Sanger

-15 years

-1 genome (one person)

-\$3 billion

Uses PCR and sequences broken by faulty base pairs to work backwards

2014 X-Ten releases

-Hiseq by Illumina (look up video of how it works)

-1 day

-45 whole genomes

-\$1000 bucks each

Sheet of glass with 8 lanes with flow cells... (look up)

PapeDiscussion: