

Microbial Ecology and Molecular Phylogeny Terminology:

PCR: Polymerase Chain Reaction; a method of amplifying a gene or gene fragment using a thermostable DNA polymerase in conjunction with flanking oligonucleotide primers (or short synthetic pieces of DNA).

RFLP: Restriction Fragment Length Polymorphism; a method whereby enzymes are used to cut or restrict DNA at defined locations to yield reproducible and distinctive size fragments or patterns for an individual or population.

OTU: Operational Taxonomic Unit; a taxonomic unit defined in some reproducible manner (e.g., defined by an RFLP and synonymous with phylotype once the phylogeny is established).

Community Structure: The number of OTUs present in a community and the abundance of individual representatives from within each OTU or population (i.e., the census part).

- **Evenness** or the distribution of populations within a community based on the number of individuals and OTUs.
- **Richness** or the number of populations in a community aka diversity.

Diversity: (i) A metric for the number of populations in a community, and (ii) the genetic relatedness among those populations (i.e., the genealogy part).

Endemism: The idea that a particular taxon is localized in its distribution.

Cosmopolitan: The idea that a particular taxon is widely distributed.

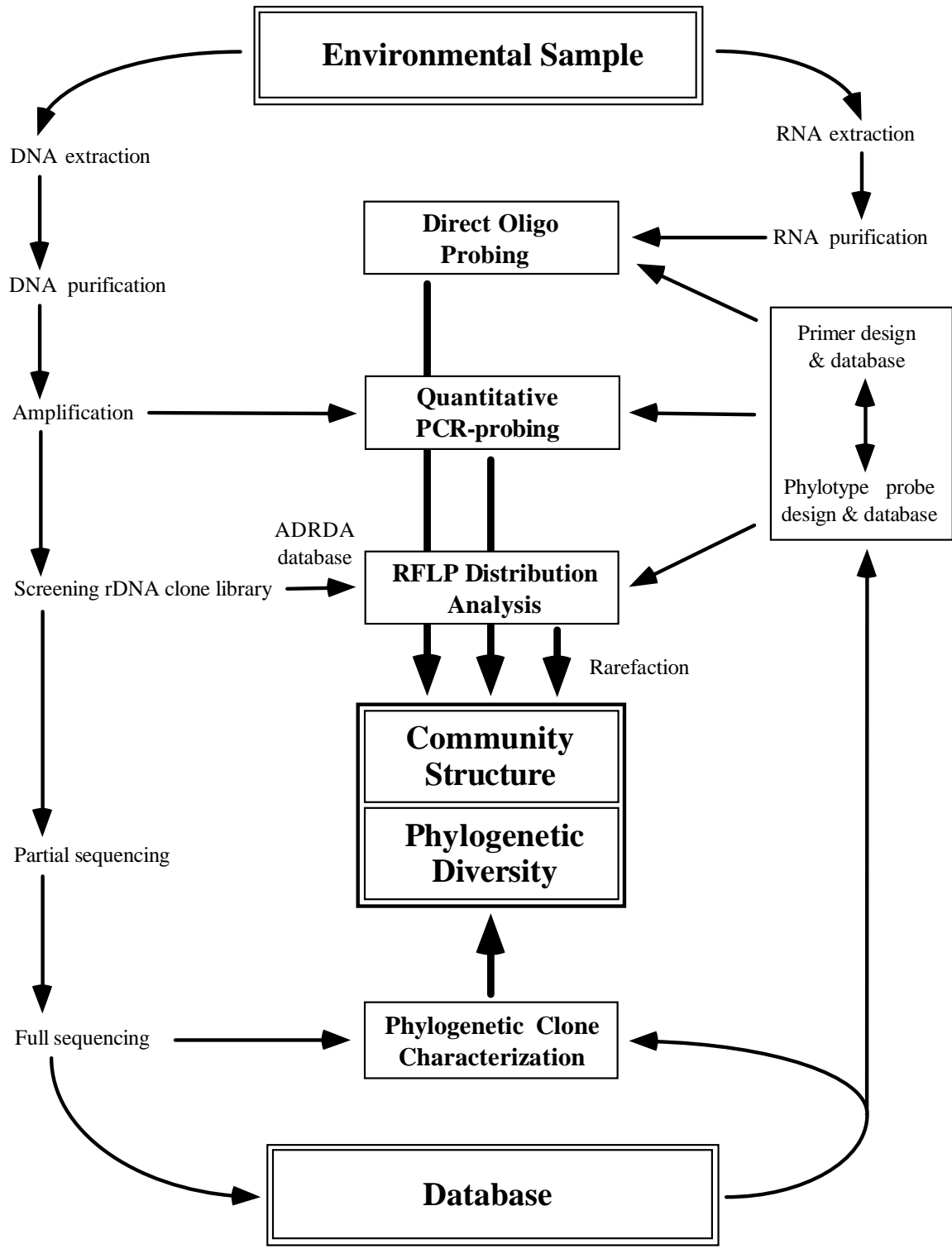
Ecosystem: functional self-supporting system that includes the taxa within the community and their environment.

Autochthonous: A taxon is indigenous to an ecosystem.

Allochthonous: A taxon is foreign to an ecosystem.

Autecology: the study of individual taxa in relation to their environment.

Synecology: the study of whole communities in relation to their environment.



Appendix I. Flowchart describing dependency of experimental design for **Environmental Sample** analysis with sequence **Database**, while maintaining the ultimate goal of determining microbial **Community Structure** and **Phylogenetic Diversity**.