

Microbial Identification by DNA Sequencing

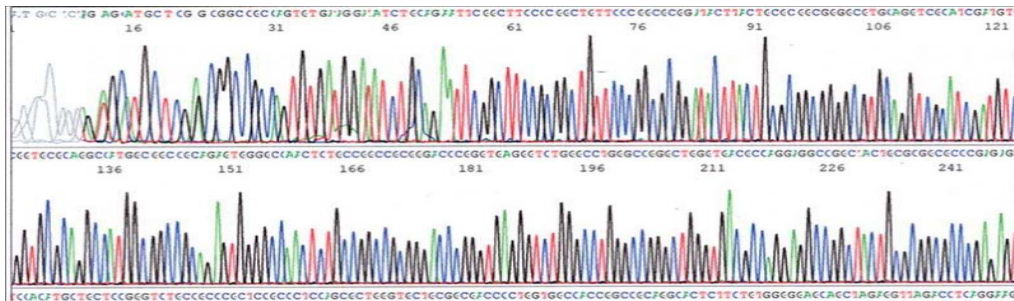
See Technical Bulletin-Microorganism Identification by DNA Sequencing

The use of DNA sequencing technology at CPAL enables us to quickly help identify organisms that are

- 1) slow growing
- 2) presenting with unusual phenotypes or otherwise difficult to identify, with certainty.

In many instances, the sequencing analysis of certain genes in these microorganisms can aid in the identification.

Sequencing can now be performed from MGIT tube samples! [Click Here](#) for Submission Instructions

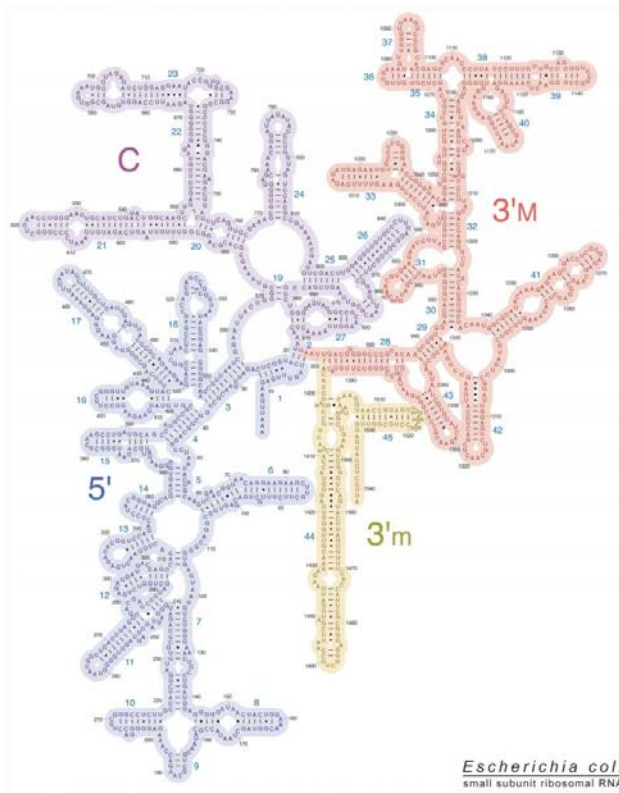


CPAL employs a series of sequencing protocols that examine various genes (depending on the organism) to obtain DNA sequence information. The DNA sequence information is used to search national DNA databases (typically GenBank) to find sequences for previously identified organisms. These “matches” are then reported to the ordering microbiology labs as an aid in identification.

Please contact the laboratory for special or unusual cases ie. Blood culture issues, very slow growers, etc.

Sequencing Available

- **16S rDNA** gene (prokaryotic micro-organisms)
- **HSP65** gene (used for speciation of Mycobacterium and Nocardia species)
- **18S rDNA** gene - 2 different regions - (eukaryotic micro-organisms)
- **ITS** (intervening transcribed sequence – assists with difficult eukaryotic organism identifications)
- **sodA** gene - (useful for certain Staphylococcus, Nocardia and Mycobacterium species)
- **rpoB** gene - (useful for Staphylococcus, Streptococcus, Haemophilus, Bartonella, Corynebacterium and Mycobacterium)
- **tuf** gene - (useful for certain Staphylococcus and Streptococcus species)



The picture above is the 2D structure of the 16S rRNA molecule. Molecular systematic studies and the MICRO ID assay (prokaryotes) is based on sequencing portions of the gene for the 16S rRNA. The sequence is compared to other sequences in GenBank. Often a presumptive match can be obtained to the species level. CPAL also employs several other sequencing strategies to obtain reliable micro-organism identifications.

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