



Cb =pH[H ⁺]	[OH ⁻]	Alpha(A)	Phi
7.403.98E-08	2.51E-07	0.201	0.201
7.602.51E-08	3.98E-07	0.285	0.285
8.001.00E-08	1.00E-06	0.500	0.500
8.403.98E-09	2.51E-06	0.715	0.715
8.801.58E-09	6.31E-06	0.863	0.863
9.001.00E-09	1.00E-05	0.909	0.910
9.403.98E-10	2.51E-05	0.962	0.963
9.801.58E-10	6.31E-05	0.984	0.988
10.001.00E-10	1.00E-04	0.990	0.996
10.206.31E-11	1.58E-04	0.994	1.003
10.403.98E-11	2.51E-04	0.996	1.011
10.602.51E-11	3.98E-04	0.997	1.021
10.801.58E-11	6.31E-04	0.998	1.037
11.001.00E-11	1.00E-03	0.999	1.060
11.206.31E-12	1.58E-03	0.999	1.096
11.503.16E-12	3.16E-03	1.000	1.196



DNA Lab Services

Genetic information of all life forms on planet Earth is stored and passed on to their offspring in universal way of genetic material made of nucleic acid. Two different types of nucleic acid: either deoxyribonucleic acid (DNA) and / or ribonucleic acid (RNA) can be found in every biological organism. DNA and RNA compositions are unique in every living thing. Modern molecular techniques allow for the detection and identification of individual biological species by revealing distinct genetic signatures in their genomes.

Molecular analysis of fungi bacteria and viruses in environmental and food samples is performed at EMSL Analytical, Inc. DNA Laboratory. DNA Lab currently offers a variety of molecular methods for the detection of pathogens that are of interest to the indoor air quality, food spoilage, sewer contamination, consumer products, and pharmaceutical industries. Quantitative Polymerase Chain Reaction (qPCR) is a cutting-edge molecular technology which amplification power can be harnessed for detection of traces of DNA and/or RNA as minute as a single molecule. Plus to qPCR, EMSL DNA Lab performs DNA sequencing for bacterial and fungal identification and whole genome sequencing (WGS) for advanced genetic analysis.

qPCR and other culture-independent molecular methods represent an excellent alternative to existing standard culture techniques as they enable reliable detection and quantification of pathogens whether they are alive, dead, or cannot be cultured. As conventional microbiological methods rely on multiplication of bacteria during culture or direct microscopic examination, qPCR is free of such limitations. qPCR technology is a powerful tool for express microbial detection, identification, quantification and typing. Other molecular assays such as DNA sequencing and WGS can be used for in-depth characterization of biological objects.

Key tests include* (but are not limited to) the following:

PCR - WATER DAMAGE PANELS

- Environmental Relative Moldiness Index (ERMI)
- Water Damage 10 Panel
- Water Damage 15 Panel
- Water Damage 20 Panel
- *Aspergillus/Penicillium* Screen

PCR - ASPERGILLUS PANELS

- *Aspergillus* Comprehensive 15 Panel
- *Aspergillus* Common 10 Panel
- *Aspergillus* Nosocomial 6 Panel

PCR - PENICILLIUM PANELS

- *Penicillium* Comprehensive 13 Panel
- *Penicillium* Comprehensive Mycotoxin 9 Panel



PCR - FECAL CONTAMINATION INDICATORS

- *E. coli*
- Total *Enterococcus*
- Total *Bacteroides*
- Human *Bacteroides*

PCR - FOOD

- Meat Species Identification

PCR - LEGIONELLA TESTING

- Broad Screen for 50 *Legionella* spp. and *Legionella pneumophila*
- *Legionella pneumophila*
- *Legionella pneumophila* serogroup 1
- *Legionella micdadei*
- *Legionella sainthelensi/cincinnatiensis*
- *Legionella maceachernii*

PCR - PATHOGEN DETECTION PACKAGES

- *Mycobacterium tuberculosis*
- *E. coli* O157:H7
- *Salmonella*
- *Histoplasma capsulatum*
- *Cryptococcus neoformans*
- *Giardia* spp.

PCR and DNA SEQUENCING

- Bacteria DNA ID
- Fungi DNA ID
- Whole Genome Sequencing utilizing Next-Generation Sequencing (NGS)

DNA - VIRUS TESTING

- SARS-CoV-2 (COVID-19), N1 and N2 Markers

PCR – OTHER

- Bed Bug (*Cimex lectularius*)
- Ticks- Lyme Disease Pathogen *Borrelia burgdorferi*

*The above is a summary of key tests. Visit www.EMSL.com for a full listing and pricing of testing offered.

