Certificate in Functional Medicine and Wellness Coaching

Functional Lab Testing

Amino Acid: An organic compound that serves as the building block of proteins, playing a crucial role in various bodily functions, including the synthesis of enzymes, , and other biomolecules, with examples of amino acids including alanine, glutamine, and tryptophan. Related terms include protein synthesis, nutrient metabolism, and gut health. In the context of Functional Lab Testing, amino acid profiles can help identify deficiencies or imbalances in amino acid metabolism, which can inform personalized nutrition and supplementation plans.

Antibody: A protein molecule produced by the immune system in response to the presence of a foreign substance, such as a pathogen or allergen, with the purpose of neutralizing or removing the threat from the body. Related terms include immunoglobulin, immunity, and inflammation. In Functional Lab Testing, antibody tests can help diagnose autoimmune disorders, infections, or allergies, and inform treatment plans.

Apoptosis: A process of programmed cell death, which plays a crucial role in maintaining tissue homeostasis and preventing cancer development, with regulation involving a complex interplay of proteins and signaling pathways. Related terms include cell cycle, proliferation, and differentiation. In the context of Functional Lab Testing, apoptosis assays can help identify dysregulation of cell death pathways, which can inform therapeutic strategies for cancer or degenerative diseases.

Biomarker: A measurable indicator of a biological process or pathological state, used to assess health status, diagnose diseases, or monitor treatment response, with examples including enzymes, , and genetic variants. Related terms include diagnostics, prognostics, and personalized medicine. In Functional Lab Testing, biomarkers can help identify patterns of dysfunction or imbalance, informing targeted interventions and lifestyle modifications.

Cortisol: A steroid produced by the adrenal gland, playing a crucial role in stress response, inflammation regulation, and metabolic homeostasis, with elevated levels linked to chronic stress, obesity, and metabolic disorders. Related terms include adrenal function, hypothalamic-pituitary-adrenal axis, and stress management. In Functional Lab Testing, cortisol tests can help evaluate adrenal function, stress response, and hormonal balance, informing personalized stress management and hormone regulation strategies.

Cytochrome P450: A family of enzymes involved in the metabolism of xenobiotics, including drugs, toxins, and hormones, with polymorphisms in these enzymes influencing individual variability in drug response and toxicity, and related terms include pharmacogenomics, toxicology, and detoxification. In Functional Lab Testing, cytochrome P450 genotyping can help predict individual variability in drug metabolism and toxicity,

informing personalized medication and detoxification strategies.

Detoxification: A process by which the body removes or transforms toxins and xenobiotics, involving enzymatic reactions, transport mechanisms, and excretion pathways, with impaired detoxification linked to chronic diseases and environmental toxins, and related terms include biotransformation, excretion, and environmental health. In Functional Lab Testing, detoxification profiles can help identify impaired detoxification pathways, informing targeted interventions and lifestyle modifications to support optimal detoxification.

Dysbiosis: An imbalance in the gut microbiome, characterized by alterations in the composition or function of the microbial community, linked to various chronic diseases, including inflammatory bowel disease, obesity, and mental health disorders, and related terms include gut health, microbiome, and probiotics. In Functional Lab Testing, dysbiosis can be assessed through stool testing, informing targeted interventions and lifestyle modifications to support optimal gut health.

Electrolyte: A mineral ion that carries an electric charge, playing a crucial role in maintaining fluid balance, nerve function, and muscle contraction, with examples including sodium, potassium, and calcium, and related terms include hydration, electrolyte balance, and mineral metabolism. In Functional Lab Testing, electrolyte panels can help identify imbalances or deficiencies in electrolyte levels, informing personalized hydration and electrolyte replacement strategies.

Endotoxin: A lipopolysaccharide molecule found in the outer membrane of Gram-negative bacteria, capable of stimulating a strong immune response and inflammation, with elevated levels linked to chronic diseases, including metabolic disorders and inflammatory bowel disease, and related terms include gut health, immunity, and inflammation. In Functional Lab Testing, endotoxin tests can help evaluate gut barrier function and inflammation status, informing targeted interventions and lifestyle modifications to support optimal gut health.

Enzyme: A biological molecule that catalyzes a specific chemical reaction, playing a crucial role in various metabolic pathways, including energy production, detoxification, and hormone regulation, with examples including lactase, amylase, and cytochrome P450, and related terms include metabolism, biochemistry, and nutrient metabolism. In Functional Lab Testing, enzyme tests can help evaluate metabolic function and nutrient deficiencies, informing personalized nutrition and supplementation plans.

Epigenetics: The study of heritable changes in gene expression that do not involve changes to the underlying DNA sequence, with epigenetic modifications influencing gene function and phenotype, and related terms include genomics, gene regulation, and environmental health. In Functional Lab Testing, epigenetic tests can help evaluate gene expression and epigenetic modifications, informing targeted interventions and lifestyle modifications to support optimal gene function.

Fatty Acid: A carboxylic acid with a long aliphatic chain, playing a crucial role in energy production,

membrane structure, and signaling pathways, with examples including omega-3, omega-6, and saturated fatty acids, and related terms include lipid, metabolism, and nutrition. In Functional Lab Testing, fatty acid profiles can help identify deficiencies or imbalances in fatty acid metabolism, informing personalized nutrition and supplementation plans.

Gastrointestinal: Relating to the digestive system, including the mouth, esophagus, stomach, small intestine, and large intestine, with gastrointestinal health influencing nutrient absorption, immune function, and overall well-being, and related terms include gut health, microbiome, and digestion. In Functional Lab Testing, gastrointestinal tests can help evaluate gut function, inflammation status, and microbiome composition, informing targeted interventions and lifestyle modifications to support optimal gut health.

Gene Expression: The process by which the information encoded in a gene is converted into a functional product, such as a protein or RNA molecule, with gene expression influencing phenotype and disease susceptibility, and related terms include genomics, epigenetics, and transcription. In Functional Lab Testing, gene expression tests can help evaluate gene function and epigenetic modifications, informing targeted interventions and lifestyle modifications to support optimal gene function.

Glucose: A simple sugar that serves as a primary source of energy for cells, with glucose metabolism influencing blood sugar control, insulin sensitivity, and metabolic health, and related terms include insulin, glycemia, and metabolism. In Functional Lab Testing, glucose tests can help evaluate glucose metabolism, insulin sensitivity, and metabolic health, informing personalized nutrition and lifestyle modifications to support optimal glucose control.

Gut-Brain Axis: A bidirectional communication network between the gut microbiome and the central nervous system, influencing mood, cognition, and behavior, with dysregulation of the gut-brain axis linked to neurological and psychiatric disorders, and related terms include gut health, microbiome, and neurology. In Functional Lab Testing, gut-brain axis tests can help evaluate gut function, inflammation status, and microbiome composition, informing targeted interventions and lifestyle modifications to support optimal gut-brain health.

Hormone: A chemical messenger produced by endocrine glands, playing a crucial role in regulating various physiological processes, including growth, development, and metabolism, with examples including insulin, thyroid hormone, and cortisol, and related terms include endocrinology, hormone regulation, and metabolism. In Functional Lab Testing, hormone tests can help evaluate hormone levels, hormone regulation, and endocrine function, informing personalized hormone replacement and lifestyle modifications to support optimal hormone balance.

Immune System: A complex network of cells, tissues, and organs that work together to protect the body against infections, inflammation, and disease, with immune function influencing infection susceptibility, autoimmunity, and cancer development, and related terms include immunology, inflammation, and

infection. In Functional Lab Testing, immune system tests can help evaluate immune function, inflammation status, and infection susceptibility, informing targeted interventions and lifestyle modifications to support optimal immune function.

Inflammation: A complex biological response to injury or infection, characterized by redness, swelling, heat, and pain, with chronic inflammation linked to various degenerative diseases, including arthritis, cardiovascular disease, and cancer, and related terms include immune system, infection, and oxidative stress. In Functional Lab Testing, inflammation tests can help evaluate inflammation status, oxidative stress, and immune function, informing targeted interventions and lifestyle modifications to support optimal inflammation regulation.

Insulin: A hormone produced by the pancreas that regulates blood sugar levels by facilitating glucose uptake in cells, with insulin resistance linked to type 2 diabetes, metabolic syndrome, and cardiovascular disease, and related terms include glucose, glycemia, and metabolism. In Functional Lab Testing, insulin tests can help evaluate insulin sensitivity, glucose metabolism, and metabolic health, informing personalized nutrition and lifestyle modifications to support optimal glucose control.

Leptin: A hormone produced by adipose tissue that regulates energy balance, appetite, and metabolism, with leptin resistance linked to obesity, metabolic syndrome, and type 2 diabetes, and related terms include energy balance, appetite regulation, and metabolism. In Functional Lab Testing, leptin tests can help evaluate leptin levels, leptin sensitivity, and metabolic health, informing personalized nutrition and lifestyle modifications to support optimal energy balance.

Lipid: A biomolecule that includes fats, oils, sterols, and waxes, playing a crucial role in energy production, membrane structure, and signaling pathways, with examples including cholesterol, triglycerides, and phospholipids, and related terms include lipid metabolism, lipoprotein, and cardiovascular health. In Functional Lab Testing, lipid profiles can help identify lipid metabolism imbalances or deficiencies, informing personalized nutrition and supplementation plans.

Lymphocyte: A type of white blood cell that plays a crucial role in immune function, including B cells, T cells, and natural killer cells, with lymphocyte function influencing infection susceptibility, autoimmunity, and cancer development, and related terms include immune system, inflammation, and infection. In Functional Lab Testing, lymphocyte tests can help evaluate immune function, inflammation status, and infection susceptibility, informing targeted interventions and lifestyle modifications to support optimal immune function.

Microbiome: The collective community of microorganisms that inhabit the human body, including bacteria, viruses, fungi, and protozoa, with the gut microbiome playing a crucial role in digestion, immune function, and overall health, and related terms include gut health, probiotics, and prebiotics. In Functional Lab Testing, microbiome tests can help evaluate gut function, inflammation status, and microbiome

composition, informing targeted interventions and lifestyle modifications to support optimal gut health.

Mitochondria: The powerhouse of the cell, responsible for generating energy through cellular respiration, with mitochondrial function influencing energy production, metabolism, and cell survival, and related terms include energy metabolism, cellular respiration, and oxidative phosphorylation. In Functional Lab Testing, mitochondrial function tests can help evaluate mitochondrial function, energy production, and metabolic health, informing personalized nutrition and supplementation plans.

Mucosa: A membranous tissue that lines the gut, respiratory, and urogenital tracts, playing a crucial role in barrier function, immune defense, and absorption of nutrients, with mucosal health influencing infection susceptibility, inflammation, and autoimmune diseases, and related terms include gut health, immune system, and inflammation. In Functional Lab Testing, mucosal tests can help evaluate mucosal function, inflammation status, and immune function, informing targeted interventions and lifestyle modifications to support optimal mucosal health.

Neurotransmitter: A chemical messenger that transmits signals between neurons, playing a crucial role in regulating mood, cognition, and behavior, with examples including serotonin, dopamine, and acetylcholine, and related terms include neurology, psychiatry, and neurophysiology. In Functional Lab Testing, neurotransmitter tests can help evaluate neurotransmitter levels, neurotransmitter function, and neurological health, informing personalized nutrition and supplementation plans.

Nutrient: A substance that provides nourishment to the body, including macronutrients such as carbohydrates, proteins, and fats, and micronutrients such as vitamins and minerals, with nutrient deficiencies or imbalances linked to various chronic diseases, and related terms include nutrition, diet, and supplementation. In Functional Lab Testing, nutrient tests can help identify nutrient deficiencies or imbalances, informing personalized nutrition and supplementation plans.

Oxidative Stress: A state of imbalance between oxidants and antioxidants in the body, leading to cellular damage, inflammation, and chronic diseases, including cancer, neurodegenerative diseases, and cardiovascular disease, and related terms include antioxidant, free radical, and inflammation. In Functional Lab Testing, oxidative stress tests can help evaluate oxidative stress levels, antioxidant function, and inflammation status, informing targeted interventions and lifestyle modifications to support optimal antioxidant function.

Pathogen: A microorganism that causes disease or infection in the body, including bacteria, viruses, fungi, and protozoa, with pathogen detection and identification crucial for diagnosis and treatment of infectious diseases, and related terms include infection, immunity, and antimicrobial therapy. In Functional Lab Testing, pathogen tests can help identify pathogens and infections, informing targeted interventions and antimicrobial therapies.

PH: A measure of the acidity or alkalinity of a solution, with pH levels influencing enzyme function, protein

structure, and cell membrane integrity, and related terms include acid-base balance, buffering capacity, and electrolyte balance. In Functional Lab Testing, pH tests can help evaluate acid-base balance, electrolyte levels, and renal function, informing personalized nutrition and lifestyle modifications to support optimal acid-base balance.

Probiotic: A live microorganism that provides health benefits when administered in adequate amounts, including bacteria and yeast, with probiotics influencing gut health, immune function, and overall well-being, and related terms include prebiotic, synbiotic, and gut microbiome. In Functional Lab Testing, probiotic tests can help evaluate gut function, inflammation status, and microbiome composition, informing targeted interventions and lifestyle modifications to support optimal gut health.

Protein: A biomolecule composed of amino acids, playing a crucial role in structure, function, and regulation of cells and tissues, with examples including enzymes, hormones, and structural proteins, and related terms include amino acid, peptide, and protein synthesis. In Functional Lab Testing, protein tests can help evaluate protein levels, protein function, and nutrient metabolism, informing personalized nutrition and supplementation plans.

Reactive Oxygen Species: A type of highly reactive molecule that contains oxygen, including free radicals and peroxides, with reactive oxygen species playing a role in cellular damage, inflammation, and chronic diseases, and related terms include antioxidant, oxidative stress, and inflammation. In Functional Lab Testing, reactive oxygen species tests can help evaluate oxidative stress levels, antioxidant function, and inflammation status, informing targeted interventions and lifestyle modifications to support optimal antioxidant function.

Saliva: A clear, watery fluid produced by the salivary glands, playing a crucial role in digestion, oral health, and immune function, with saliva testing used to evaluate hormone levels, infection status, and oral health, and related terms include oral health, digestion, and immune function. In Functional Lab Testing, saliva tests can help evaluate hormone levels, infection status, and oral health, informing personalized nutrition and lifestyle modifications to support optimal oral health.

Stool: A semisolid waste material produced by the gut, containing undigested food particles, bacteria, and waste products, with stool testing used to evaluate gut health, infection status, and digestive function, and related terms include gut health, digestion, and microbiome. In Functional Lab Testing, stool tests can help evaluate gut function, inflammation status, and microbiome composition, informing targeted interventions and lifestyle modifications to support optimal gut health.

Toxin: A poisonous substance that can cause harm or disease in the body, including environmental toxins, heavy metals, and endotoxins, with toxin exposure linked to various chronic diseases, including cancer, neurodegenerative diseases, and reproductive disorders, and related terms include detoxification, environmental health, and toxicology. In Functional Lab Testing, toxin tests can help identify toxin exposure,

detoxification capacity, and oxidative stress levels, informing targeted interventions and lifestyle modifications to support optimal detoxification.

Urine: A yellowish fluid produced by the kidneys, containing waste products, electrolytes, and hormones, with urine testing used to evaluate kidney function, hormone levels, and metabolic health, and related terms include kidney function, hormone regulation, and metabolism. In Functional Lab Testing, urine tests can help evaluate kidney function, hormone levels, and metabolic health, informing personalized nutrition and lifestyle modifications to support optimal kidney function.

Vitamin: A group of organic compounds that are essential for normal growth, development, and metabolism, with examples including vitamin C, vitamin D, and vitamin B12, and related terms include mineral, nutrient, and supplementation. In Functional Lab Testing, vitamin tests can help identify vitamin deficiencies or imbalances, informing personalized nutrition and supplementation plans.