

## What coursework do I get in the Clinician's Code?

### The Cell Code™

**The Cell Blueprint Explained** - We don't want you to just memorize, we to help you build a rock-solid foundation so that you can apply this knowledge in your sleep. In this module, you will learn how the Levels of Organization unlock clinical direction. You'll learn each area of Cell Blueprint™ so you can apply it and explain it with confidence and ease.

**The Cell Blueprint Assessed** - Time to put The Cell Blueprint™ into action. In this module, you will learn how to use the Assessment Form and Interpretation Guide. However, we don't just want you to use it, we want you to know it, so you can apply it accurately. With that, we also dive into each section of these forms, so you fully understand where to go with each patient.

**The Cell Blueprint Case Studies** - Now that you know the method and how to apply it, it's time for case studies. In this module, you pull up a chair to see real-world case studies in our practice using The Cell Blueprint Assessment Form and Interpretation Guide. This includes the follow-up testing that was done based on the findings. You will see first-hand how easy and valuable this system is in clinical practice.

### The Blood Chem Code™

**Intro To Blood** – We cover the important characteristics of blood including functions, regulation, hematopoiesis, and main constituents.

**CBC with Differential** – Learn the specifics of how red blood cells are made (erythropoiesis), the markers of a CBC and what they specifically are and measure, as well as iron metabolism and related markers.

**Enzymes and Wastes** - Learn the physiology, biochemistry, and role of all the primary enzymes and wastes on a standard blood chemistry, including AST, ALT, alkaline phosphatase, GGT, LDH, creatinine, BUN, bilirubin, etc.

**Electrolytes** – Learn the physiology, biochemistry and function of the major electrolytes found on a blood chemistry, including calcium, phosphorus, sodium, potassium, chloride and bicarbonate.

**Glucose and Lipids** - In this module, we dive into the physiology of glucose regulation and related hormones and markers, as well as the physiology of the lipids found on a blood chemistry, including cholesterol and triacylglycerols.

**Introduction and Blood Chemistry** - Learn the research and reasoning behind blood chemistry, including how our ranges were created and why we're teaching them the way we are.

**Glucose Regulation and Lipids** - Learn glucose regulation and related markers like you've never seen it. It includes physiology, a half-dozen glucose-related markers, evidence-based reference ranges, myth-busting on hypoglycemia and insulin resistance, and so much more.

**Micronutrients** – Learn the primary micronutrients found on a blood chemistry, including a detailed look at magnesium, calcium, and phosphorus, including evidence-based reference ranges for each.

**CBC and Anemia** - Learn evidence-based reference ranges for a CBC, the physiology of each marker, and how do identify, differentiate, and discern different types of anemias.

**Mitochondria** – Learn the relevant research on mitochondrial dysfunction, what causes it, whether or not we can accurately assess it using laboratory testing (hint: we can't, well), and emerging therapeutic options for patients and clients with mitochondrial issues.

**Oxidative Stress** – Learn why what you were taught about free radicals and oxidative stress is obsolete and needs an upgrade. This module not only brings this much needed scientific literature-based upgrade of information, but also covers the best, most accurate, and scientifically valid means of using a blood chemistry to evaluate oxidative stress.

**Immune Dysregulation** - Sometimes referred to as "autoimmunity", learn an introduction to how the immune system can become dysfunctional and start attacking self-tissues, a novel marker that is a true Th1 marker, and how to accurately evaluate a few proteins on a blood chemistry, including albumin and globulins.

**Infections** – Learn the role of silent, or latent, infections and the role of iron (and possibly iron deficiency anemia) in people with chronic infections. The differential of a CBC is covered in detail, with compelling evidence-based optimal ranges.

**Inflammation, Cell Damage, and Wastes** - Learn some of the markers relating to inflammation such as CRP, ESR, and how using both together is better than individually. It also covers blood chemistry enzymes (AST, ALT, GGT), wastes (creatinine, bilirubin, and BUN), and a section on fatty liver.

**Acid-Base Balance** - This module covers the science behind the hotly contested conversations surrounding acidity, alkalinity, and pH balance. Blood chemistry markers such as chloride and bicarbonate are covered, as well as validated calculations for serum pH.

**Hydration** – Learn the many ways of assessing hydration status, and which is the most accurate. You'll learn validated calculations for osmolarity and viscosity and find yourself wondering why you've never heard of these calculations before.

**Social Isolation and Purpose** - Biochemistry, physiology, and blood chemistry interpretation are all incredible tools in your quest to help your patients, but if we aren't considering their perspective, world view, and purpose in life, we are failing our patients and clients. Get inspired to truly help people with this module.

## The Detox Code

### Chemicals: An In-Depth Review

- How Toxic Are We?
- Does the Dose Matter?
- Classification of Chemicals
- Is There A Mixture Effect?
- How Chemicals Cause Damage
- Chemicals, Physiological Dysfunction, and Disease

**Physiology and Biochemistry of Detoxification** - You will learn the latest scientific information about detoxification, including:

- Detoxification Overview
- Liver Anatomy and Physiology
- Phase 0 and Phase 3 Detoxification
- Phase I Detoxification
- Phase II Detoxification
- Nrf2 and Metallothionein

### How to Run an Evidence Based Detoxification

- In this final module, you will learn step-by-step everything you want to know about running an evidence-based detoxification program on clients. In this module, you will learn:
- A hydration calculation so you know exactly how much water someone should drink during a sauna session

- Evidence-based food, beverages, and supplements to use to safely, but effectively, detoxify someone
- Critical steps that people should do before they do a detoxification program

### The Foundations Code™

- **Functional Cellular Biology** - A broad but semi-detailed review on cells, how they work, what they need to function optimally, and how they can become dysfunction. If the human body is made up of a hundred trillion cells, we must first understand how cells work to help our clients feel better.
- **Carbohydrates, Proteins and Lipids: Structure, Function, Digestion and Overview of Biochemical Pathways** - Learn carbohydrate, protein and lipids, which is critical to understand as when discussing different biochemical pathways, and their dysfunction, we understand these molecules, their structure, and how they enter cells. The rest of the videos will discuss what happens to them once they enter a cell.
- **Biochemistry Overview** – Learn the major biochemical metabolic pathways and more importantly, how they integrate and work together. This will set the stage for talking about each pathway in more detail and helps people see the big picture of biochemistry.
- **Carbohydrate Metabolism Part I** - Learn glycolysis, the citric acid cycle, and the electron transport chain. Important nutritional concepts will also be covered, including what micronutrients are necessary for proper function of these pathways.
- **Carbohydrates Metabolism Part II** - Learn gluconeogenesis, glycogenesis, glycogenolysis, the pentose phosphate pathway, as well as fructose and galactose metabolism. As always, important clinical and nutritional correlations will be made.
- **Lipid Metabolism Part I** – Learn the metabolism of lipids, including lipogenesis (fatty acid synthesis), lipolysis (fatty acid mobilization), beta-oxidation, and ketone synthesis and breakdown.
- **Lipid Metabolism Part II** - Learn cholesterol synthesis and degradation, triacylglycerol synthesis, phospholipid synthesis and degradation, and eicosanoid production.
- **Amino Acid Metabolism** - Learn amino acid synthesis, degradation and the urea cycle.
- **Individual Amino Acids** – Learn amino acids in detail. We will go into some depth of the individual amino acids, their function in the body as

well as deficiency symptoms a client may present with if deficient in certain amino acids.

- **Protein Synthesis** – Learn how proteins are synthesized in the body, including the role of ribose, purines, pyrimidines, RNA and DNA.
- **Metabolic Integration** – Learn the biochemical pathways and how they work together, including in a fed and fasted state. These are often favorite videos of students because it puts together everything learned in this course up to this point in an integrated, comprehensive manner.
- **Neuron and Skeletal Muscle Metabolism** - Now that we have covered all the major nutritional biochemical pathways, we will start to explore certain tissues to see how they differ biochemically.
- **The Biochemistry of Inflammation and Reactive Oxygen Species** - This video will cover the concepts of meta- and para-inflammation, as well as nuclear factor kappa beta, PPAR receptors, adiponectin, and cytokines.
- **The Biochemistry of Methylation, Mitochondrial Dysfunction** – Learn the basic concepts of methylation to give you a better understanding of the conversations taking place in the field today. We will also cover the concepts of mitochondrial dysfunction and endoplasmic reticulum stress as it relates to clients and patients.
- **Cellular Physiology** - Learn body water compartments, architecture of the cell, cell membrane physiology and components, cellular junctions and connections, membrane transport, osmosis, resting membrane potential, and cell-to-cell communication.
- **Tissues** – Learn the need-to-know information about epithelial tissue, connective tissue, and muscle tissue, in easy-to-understand ways that will never have you wondering the role or function of any tissue in the body.
- **Muscle** - Learn skeletal muscle anatomy and a detailed look at skeletal muscle contraction. You'll also learn about force-length relationships and twitches in skeletal muscle, including concepts about motor units and different types of skeletal muscle. You'll also learn about smooth muscle anatomy and contraction, as well as cardiac muscle.
- **Nervous System Intro** - How the nervous system is organized, parts of a neuron, types of neurons and nervous system terminology, neuron action potentials, neurotransmission, neurotransmitters, and long-term potentiation.
- **Central Nervous System** - Learn about neuroglial cells, meninges, cerebral spinal fluid, anatomy of the spinal cord, overview of the brain, cerebral lobes, basal ganglia, hypothalamus, thalamus, cranial nerves,

cerebellum, brainstem, Brodmann areas, reticular formation, and reflex arcs. After watching this module, you'll be a changed person.

- **Peripheral Nervous System** - Learn about sensory receptors, as well as spinal cord tracts. Tracts include ascending tracts, such as the dorsal-medial-lemniscus, spinothalamic and spinocerebellar tracts. Descending tracts include the corticospinal, vestibulospinal, and reticulospinal tracts.
- **Autonomic Nervous System** – Learn the basics of the autonomic nervous system, sympathetic and parasympathetic pathways, as well as adrenergic and cholinergic receptors.

**PracticeUp Library** – An entire library of topics to help you become a sharper clinician including:

- Eudaimonia and Well-Being: Evidence Based Applications
  - Mindfulness, Mind Over Matter, and How Perception Impacts Physiology and Health Outcomes
  - The Prevalence, Clinical Identification and Treatment of Dormant Infections – What to do about Iron Overload
  - Antioxidants - Why Everything We Know and Say About them is Wrong
  - Acidosis: The Silent Killer - An Evidence-Based Approach to Evaluation and Treatment
  - Vitamin D: Could an Entire Industry Be Wrong
  - Thiamin: The Connection Between Covid, POTS, and Chronic Disease
  - Potassium, Protein, & Phosphate – How much protein do we really need?
  - SIBO: Identification, Testing & Treatment
  - Clinical Insights from a Functional Medicine Founder
  - N-Acetyl Cysteine - The Good, the Bad, and the Unknown
- New topics are added monthly to PracticeUp.