



Who Are We?

Pandecta Inc. empowers individuals to take proactive control of their health through precision proteomics. We believe in personalized health strategies tailored to each person's unique biological makeup—helping individuals understand their health state, identify modifiable risks, and act before disease develops.

Our mission is to transform health monitoring by offering timely, data-driven insights that enable informed decisions and long-term wellness.

Our vision is a world where proactive, personalized health monitoring forms the foundation of healthcare—empowering people to live longer, healthier lives.

What is Proactive Health Monitoring?

Despite advances in healthcare, individuals still face significant challenges when assessing risks for acquiring various disease conditions. Traditional medical services and conventional diagnostic methods often detect illnesses too late, leading to reactive acute responses rather than proactive health management. A reactive health management approach focuses on treating diseases or health issues only after symptoms have appeared or an event, like a heart attack or stroke, has occurred. For instance, when someone has a heart attack, doctors work to save their life, but rarely are earlier assessments performed to identify markers of cardiovascular disease that could have indicated risks long before the event.

On the other hand, a proactive health monitoring and management approach involves regularly assessing health markers to catch potential issues early on, allowing for earlier intervention through lifestyle changes,

medications, or even surgery if necessary. For example, while broken bones can be repaired, conditions affecting bone health, like osteoporosis, are rarely monitored until symptoms appear, providing limited opportunities for effective interventions. Diseases like dementia (vascular dementia, all-cause dementia, and Alzheimer's disease) have no cure, but early markers can predict the risk. With the right health regimen, the onset of these conditions can be delayed. In a proactive approach, we aim to avoid or limit disease manifestation through early risk identification, rather than responding to emerging symptoms. This strategy can help individuals live a longer and healthier life.

Recent large-scale studies have demonstrated that specific protein profiles in blood can predict cognitive decline and dementia more than a decade before clinical symptoms appear [1]. Similarly, certain proteins can predict the development of several cancer types up to seven years before diagnosis [2]. These groundbreaking findings illustrate that changes in the proteome precede disease by many years and open the possibility of early, preventive intervention.

It is also becoming increasingly clear that similar predictive protein patterns exist for cardiovascular disease, diabetes, immune dysfunction, and other chronic disorders, allowing proactive action long before damage occurs. Importantly, these risks are modifiable — early intervention through nutrition, exercise, stress management, and targeted therapies can significantly lower the likelihood of disease development and progression.





What Do We Offer?

Pandecta Inc. offers a proactive health monitoring and management system through its personalized Deep Protein Scan, intended to support individuals and healthcare practitioners in adopting a personalized strategy for health and wellness.

By analyzing thousands of proteins in your blood, Pandecta provides an unprecedented, detailed view of your unique health profile — facilitating individualized monitoring and risk assessment for several hundred health and wellness conditions. Such a comprehensive view of one's proteome, may not only help to identify emerging issues before symptoms appear, but also facilitate timely interventions that may include lifestyle modifications, therapeutics, or medical procedures, allowing for a targeted, data-driven method of managing health.

Pandecta's expertise in monitoring protein changes over time may also provide healthcare professionals with reliable insights into changes in one's health condition, disease progression, and/or treatment effectiveness. This makes Pandecta's health analytics a powerful tool for personalized health management.

What sets Pandecta apart is the multi-layered analysis of thousands of proteins, encompassing:

Established clinical biomarkers currently used in healthcare;

Emerging biomarkers supported by new peer-reviewed research; and

Research and pattern-level biomarkers, where combinations or deregulation trends of thousands of proteins provide deeper insights into risk, resilience, or disease predisposition

Continuously updated analytical algorithms that integrate the latest scientific and clinical findings, ensuring that each assessment reflects the most current knowledge in proteomics, disease prediction, and early intervention science

This approach allows Pandecta to capture subtle, system-wide changes in the proteome that may not be visible through single biomarker tests or even the most powerful imaging techniques.





Our Goals

Empower individuals to take control of their health

Provide risk assessment for many different disorders to ensure that conditions are managed early and with the most appropriate response

Monitor and manage treatments effectively

Deliver personalized and actionable health insights

At Pandecta, we ask: *What can we do to help people address their health proactively rather than reactively? How can we help people live healthier and longer lives?*

By providing detailed health insights, Pandecta enables people to make informed, personalized changes early – potentially avoiding, deferring, or mitigating the effects of many ailments. Our approach focuses on early assessment, ongoing monitoring, and personalized care, enabling management of health risks before symptoms arise.

Join us in the journey to better health. We are not just waiting for people to get sick – **we are redefining health through predictive, protein-based analytics that enable proactive and personalized care.** Together, let's create a world where informed, proactive health monitoring is the norm, not the exception.

Innovative Approach

Pandecta analytics stands out due to its ability to detect and analyze thousands of proteins from a single sample and to combine this with AI-assisted, clinically informed analysis for a holistic view of one's health.

This approach offers several advantages:

Comprehensive Health Assessment: Our scan identifies thousands of proteins, providing insights into hundreds of health-related conditions.

Efficiency: A single test provides information that currently requires multiple independent tests, plus unique insights unavailable elsewhere.

Improved Precision: Using multiple markers and deregulation patterns provides a more accurate picture of health or disease than any single marker.

Up-to-Date Science: Our algorithms are continually refined as new proteomic discoveries emerge, ensuring that every analysis reflects the latest global research.





Why Proteomic Analysis Matters

The analysis of protein expression is critical for understanding the actual state of the body at any given moment. While DNA provides the blueprint for what could happen, proteins are the molecules that carry out all the biological processes in the body. They are the real "workers" that influence cell function, disease progression, and overall health.

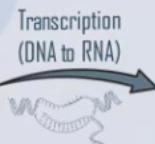
DNA analysis looks at the genetic code, which remains largely constant throughout your life. This helps predict potential risks based on inherited traits. However, DNA doesn't tell us how your body is functioning in real time or how environmental factors like diet, exercise, stress, medications and supplements, or exposure to toxins affect your health.

Protein analysis, on the other hand, gives us a real-time snapshot of your body's current state. Since proteins are directly involved in processes like cell signaling, metabolism, and immune responses, their levels change constantly, depending on what's happening in your body at any given time. For example, proteins can indicate inflammation, infections, or early signs of chronic diseases.

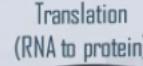
Putting it in a different way: DNA analysis looks at **inherited potential**, but proteins tell us **what is happening now** – integrating the effects of environment, diet, stress, sleep, medications, and lifestyle.

Why Proteins?

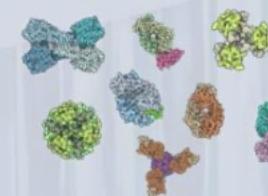
DNA



RNA



PROTEIN



Genome - Genotype

- Hereditary blueprint
- Static – same in all cells, constant copy numbers
- ~20 000 human genes
- Minimal variability

Transcriptome - Molecular Phenotype

- Subset of expressed genes
- Intermediate step
- Dynamic – cell/context-specific gene amplification (number of gene transcripts)
- Some functional roles
- Sequence based variability

Proteome - Phenotype

- End-point executors of cellular function (structural, metabolic, enzymatic, etc.)
- Highly dynamic - by cell type & environment
- Most direct readout of biological activity and drug-target engagement
- ~10 000 detectable proteins in circulation



Pandecta Inc.

The Ultimate Health Analytics:
Because You Deserve More



In proactive health monitoring, protein analysis can reveal biological changes **long before symptoms appear**, allowing early intervention that may prevent disease or slow its progression. For example, protein biomarkers have been shown to rise or fall years before clinical evidence of cognitive decline, cancer, or metabolic disease. This provides an opportunity to address the risk through lifestyle changes, medications, or other treatments. Regular Deep Protein Scan can facilitate monitoring of one's health state providing opportunities for addressing emerging conditions early.

Currently, protein analysis on a large scale, assessing thousands of proteins, is a new and emerging field. While genomic analysis has been used in clinics for some time, the analysis of proteins—known as proteomics—is not yet routine in most clinical settings. This is largely because it's a novel concept that requires sophisticated equipment, specialized expertise, and complex data interpretation.

There are, however, established protein-based tests already used in clinical practice, such as CEA (Carcinoembryonic Antigen) for monitoring colon cancer, CA-125 for monitoring ovarian and breast cancer, as well protein panels for diagnosis or monitoring of different cancers, generally not covered by provincial health insurance. These examples show that proteins are already trusted tools in modern diagnostics. What differentiates Pandecta's approach is its comprehensiveness: rather than focusing on a single protein for diagnosis, monitoring, or treatment response prediction for one disease, we analyze thousands of proteins simultaneously to capture interconnected biological pathways and early disease signatures across multiple health categories.

Because this is an emerging field, comprehensive proteomic panels like ours are not yet part of standard medical practice, and many family physicians may not yet be familiar with their interpretation, clinical implications,

or follow-up strategies. To bridge this gap, Pandecta offers consultations with licensed family physicians who can help explain results, place them in a medical context, and determine what additional follow-up, if any, may be beneficial.

The potential of protein analysis for disease stratification is already widely documented [1-6]. As this technology becomes more widely available, proteomic analysis will revolutionize how we approach health—allowing for earlier, highly personalized, and timely care, ultimately shifting healthcare from reactive treatment to proactive health management.





Our Services

By utilizing proteomic analysis, we may detect early markers of disease, allowing for timely interventions as well as predict risk for other ailments that, with proper strategy, can be addressed early allowing an individual to live a longer, healthier life, before onset of a decline.

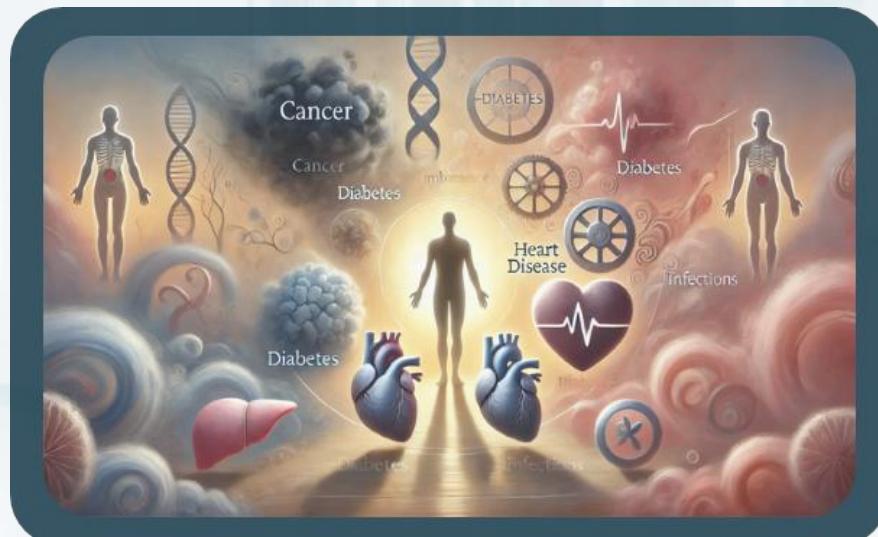
At Pandecta, we are focusing on several health and wellness categories:

Currently Assessing

- Cardiovascular Health
- Cancer
- Diabetes
- Metabolic Health
- Liver Disease
- Mental Health Disorders
- Dementia
- Immune System Disorders
- Infections/Pathogens

Developing Assessments

- Neurodegenerative Disorders
- Neuropathic Pain
- Aging
- Reproductive Health
- Fitness





CARDIOVASCULAR HEALTH

Cardiovascular disease (CVD) refers to a broad range of conditions affecting the heart and blood vessels. It is the leading cause of death worldwide, accounting for about 32% of global deaths [7]. CVD encompasses heart attacks, strokes, pulmonary hypertension, atherosclerosis, and issues related to blood flow like coronary artery disease and venous thrombosis.

- Heart Attack (Myocardial Infarction): Occurs when blood flow to a part of the heart is blocked for a long enough time to damage or kill heart muscle. About 805,000 heart attacks happen each year in the U.S. Early intervention can significantly reduce mortality. Survival rates are over 90% if treated within the first hour, but delayed treatment can reduce survival chances [8].
- Stroke: Occurs when blood supply to part of the brain is interrupted or reduced. In the U.S., approximately 795,000 people experience a stroke annually, with around 87% being ischemic strokes (due to blood clots). Rapid treatment is key; clot-busting drugs can improve outcomes when given within hours of the event [8].
- Pulmonary Hypertension: High blood pressure in the lungs' arteries can lead to heart failure. Survival rates vary based on cause, but early detection and management can significantly improve outcomes.





CANCER

Cancer is a group of diseases characterized by the uncontrolled growth and spread of abnormal cells. It can affect virtually any organ or tissue in the body, making it one of the most complex and challenging diseases to diagnose and treat. There are numerous types of cancers, including:

- **Carcinomas** (affecting epithelial cells). Examples include breast, lung, colorectal, and prostate cancer.
- **Sarcomas** (affecting connective tissues). Examples include bone and fat tissue cancer.
- **Leukemias** (blood cancers). Examples include acute lymphoblastic leukemia (ALL) and chronic myeloid leukemia (CML).
- **Lymphomas** (affecting lymphatic system). Examples include Hodgkin and non-Hodgkin lymphoma.

Early detection and targeted therapies have improved survival rates for many cancers, highlighting the importance of continued advances in this field. Globally, there are over 19 million new cases of cancer diagnosed annually. Early detection through blood tests for cancer-specific biomarkers, genetic screening, and imaging can increase survival rates dramatically across most cancer types [9].

Breast Cancer: The most common cancer among women globally. Early-stage breast cancer has a 5-year survival rate of 91% in developed countries when detected early.

Lung Cancer: Leading cause of cancer death worldwide. Non-small cell lung cancer has a 5-year survival rate of around 25% if detected early, but this drops to less than 5% in advanced stages.

Colorectal Cancer: Early detection (through colonoscopy and biomarker screening) significantly improves survival, with a 90% 5-year survival rate when diagnosed at an early stage, but only 14% at late stages.

Prostate Cancer: Second most common cancer in men. With early detection, the 5-year survival rate is nearly 100%.

Pancreatic Cancer: It is the 11th most common cancer but the 3rd leading cause of cancer-related deaths in the U.S. and is projected to become the 2nd leading cause of cancer deaths by 2030. Pancreatic cancer accounts for approximately 3% of all cancers in the United States but causes about 7% of all cancer deaths. The 5-year overall survival rate for pancreatic cancer is about 11% across all stages. This low rate reflects the fact that most cases are diagnosed at a late stage. The 5-year survival rate for localized pancreatic cancer is 44% which drops to 3% for distant metastatic pancreatic cancer. Unfortunately, around 53% of patients are diagnosed at this distant stage, reflecting the poor prognosis of late-detected pancreatic cancer.





DIABETES

Diabetes is a chronic metabolic disorder characterized by high levels of glucose in the blood. There are two main types: Type 1, where the body fails to produce insulin, and Type 2, where the body becomes resistant to insulin. Type 1 Diabetes is an autoimmune condition where the pancreas produces little to no insulin. It accounts for 5-10% of all diabetes cases. Type 2 Diabetes is a metabolic disorder where the body becomes resistant to insulin or doesn't produce enough. It accounts for 90-95% of all diabetes cases.

Approximately 536 million adults are living with diabetes worldwide (2021), with an expected rise to 783 million by 2045. Diabetes is a leading cause of blindness, kidney failure, heart attacks, and stroke. The frequency of diabetes among the population continues to increase due to lifestyle factors such as poor diet, lack of physical activity, and rising obesity rates. Early detection (fasting glucose tests, HbA1c) and lifestyle interventions (diet and exercise) can prevent Type 2 diabetes in 80% of high-risk individuals and delay or prevent complications in both types [10].

METABOLIC HEALTH

Metabolic health refers to the optimal functioning of bodily processes that regulate glucose, lipids, insulin, and inflammation. Key markers of metabolic health include stable blood sugar levels, balanced blood lipids, healthy blood pressure, effective insulin sensitivity, and healthy liver, all of which contribute to energy management, reduced risk of chronic diseases, and cognitive health. In addition, emerging evidence indicate that gut microbiota plays an important role in metabolic health. Poor metabolic health can increase the likelihood of conditions such as type 2 diabetes, cardiovascular disease, and metabolic syndrome, which collectively impact both physical and mental well-being [11].

Maintaining metabolic flexibility, or the body's ability to efficiently switch between carbohydrate and fat metabolism, also plays a significant role in enhancing energy levels, supporting weight management, and reducing chronic disease risk factors.

LIVER HEALTH

Liver health encompasses conditions that impair its function, which include non-alcoholic fatty liver disease (NAFLD), hepatitis (viral or autoimmune), cirrhosis, liver fibrosis, and hepatocellular carcinoma. The liver also regulates blood glucose levels, produces bile necessary for digestion, and plays a central role in lipid and amino acid metabolism, highlighting its significance in metabolic health.

Liver disease ranges from reversible stages, such as simple steatosis (fat accumulation), to irreversible conditions like cirrhosis and liver cancer, especially when left untreated. These conditions are commonly linked to risk factors like obesity, alcohol abuse, viral infections (e.g., hepatitis B and C), and genetic predisposition. NAFLD, for instance, is now one of the most prevalent liver diseases globally and is strongly associated with metabolic syndrome, type 2 diabetes, and cardiovascular disease [12].





MENTAL HEALTH

Mental health disorders encompass a wide array of conditions that affect mood, thinking, and behavior, such as depression, anxiety, schizophrenia, and bipolar disorder. These conditions can range from mild to severe and have a profound impact on an individual's quality of life.

- **Depression:** A mood disorder affecting over 280 million people worldwide and suicide is the second leading cause of death among 15-29-year-olds globally [13].
- **Anxiety Disorders:** Include generalized anxiety disorder (GAD), panic disorder, and phobias, affecting around 264 million people globally. Effective early treatment significantly improves long-term outcomes [14].
- **Schizophrenia:** A severe mental illness affecting approximately 20 million people [15].
- **Bipolar Disorder:** A condition characterized by extreme mood swings, including manic and depressive episodes. Bipolar disorder is a mental health condition that affects approximately 40-50 million people globally. Bipolar disorder is associated with a high risk of disability and significant impairment in daily life [16].

Mental health is important not only for emotional well-being but also for its strong link to physical health outcomes, including cardiovascular disease and immune dysfunction. Early diagnosis and treatment

(psychotherapy, medication) is essential for improving ones' quality of life.

DEMENTIA

Dementia is a particular type of mental health disorders. Dementia is a collective term used to describe a decline in cognitive function that interferes with daily life. Alzheimer's disease is the most common form, but other types include vascular dementia and Lewy body dementia.

- **Alzheimer's Disease** is the most common cause of dementia, affecting around 60-70% of dementia cases. Early detection through cognitive tests and biomarkers can slow disease progression with medication and lifestyle changes.
- **Vascular Dementia** is caused by reduced blood flow to the brain, often following a stroke. Managing cardiovascular risk factors like hypertension and diabetes can reduce the risk of vascular dementia.
- **Lewy Body Dementia** is characterized by abnormal protein deposits called Lewy bodies, causing fluctuations in cognition, attention, and hallucinations.

Dementia affects memory, problem-solving abilities, and communication skills, and it represents a major public health issue as populations age. The importance of dementia lies in its progressive nature, which can lead to complete dependency and is associated with significant emotional, social, and economic impacts on patients and caregivers. Worldwide, 55 million people live with dementia, with numbers projected to rise to 139 million by 2050. Early detection, cognitive training, and lifestyle changes (physical exercise, healthy diet, social engagement) can help manage symptoms and delay progression [17].





NEURODEGENERATIVE DISORDERS

Neurodegenerative diseases are a group of disorders characterized by the progressive degeneration or death of nerve cells, impacting cognitive and motor functions essential for health and well-being. This category includes conditions such as Alzheimer's disease, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis (ALS), and frontotemporal dementia. These diseases often lead to symptoms like memory loss, impaired movement, and difficulty with speech and coordination. Neurodegenerative diseases are typically associated with age, though genetics, environmental factors, and lifestyle choices also contribute to their onset and progression. The connection between neurodegenerative diseases and overall health lies in their cumulative impact on the brain and nervous system, which regulate essential bodily functions. Disruptions in neuronal communication, protein misfolding, oxidative stress, and chronic inflammation are common mechanisms shared by many neurodegenerative conditions [18, 19].

NEUROPATHIC PAIN

Neuropathic pain is a chronic pain condition caused by damage or dysfunction in the nervous system, leading to abnormal nerve signaling and persistent pain even without external injury or ongoing tissue damage. It often originates from injuries to the peripheral or central nervous system, resulting from conditions such as diabetes, multiple sclerosis, spinal cord injury, or postherpetic neuralgia. This type of pain manifests as burning, tingling, or sharp shooting pain and can be spontaneous or in response to normally non-painful stimuli (allodynia). Neuropathic pain vary, but common causes include metabolic disorders (e.g., diabetic

neuropathy), infections (e.g., shingles leading to postherpetic neuralgia), traumatic injuries (e.g., nerve compression or amputation), and neurodegenerative diseases (e.g., multiple sclerosis). This pain type physical and mental health due to its chronic nature, often contributing to sleep disturbances, anxiety, and depression, which can further intensify pain perception and reduce quality of life.

Diagnosing neuropathic pain involves a combination of clinical assessments, patient history, and diagnostic tools to identify characteristic pain symptoms and any underlying conditions. Quantitative sensory testing (QST), imaging (such as MRI), and specific biomarkers are sometimes used to assess nerve damage and dysfunction in the peripheral or central nervous system. Diagnosing neuropathic pain accurately is crucial for effective treatment, which may include medications, physical therapy, and occasionally neuromodulation techniques to manage symptoms and improve quality of life [20].





AGING

Aging is a complex, natural process that progressively impacts human health, wellness, and disease susceptibility. Biological aging involves cellular and molecular changes, including oxidative stress, telomere shortening, and chronic inflammation, which cumulatively reduce resilience and contribute to age-related diseases like cardiovascular disease, cancer, and neurodegenerative disorders. Protein biomarkers have become crucial for assessing biological age, offering insights into physiological health that go beyond chronological age, enabling preventative and personalized approaches to healthy aging.

While aging process cannot be prevented, healthy lifestyle choices, frequent monitoring and health management (liver health, metabolic health, physical health) are crucial for slowing the aging process and promoting longevity [21].

IMMUNE SYSTEM DISORDERS

Immune system disorders occur when the immune system is either underactive or overactive, leading to a range of conditions that include autoimmune diseases like lupus and rheumatoid arthritis, allergies, immunodeficiencies, and inflammation.

Autoimmune Diseases: Conditions where the immune system attacks the body's own cells, like lupus, rheumatoid arthritis, and multiple sclerosis. These disorders compromise the body's ability to fight infections or lead to the immune system attacking its own tissues.

Lupus: Affects approximately 5 million people worldwide. Early diagnosis and treatment can prevent severe organ damage.

Rheumatoid Arthritis: Affects over 20 million people. Early intervention with disease-modifying drugs can prevent joint damage and disability.

Allergies: While autoimmune diseases involve a misguided attack on the body's own cells due to genetic and environmental factors, allergies are a reaction to external allergens, harmless to most people, such as pollen, dust, or certain foods.

Immunodeficiencies: Conditions where part of the immune system is either absent or not functioning properly, leading to increased susceptibility to infections.

INFLAMMATION

Body's natural defense mechanism, triggered by immune cells responding to injury, infection, or harmful stimuli. Inflammation results from the immune system's activity to remove harmful stimuli and initiate healing. This process involves immune cells (like macrophages and neutrophils) that release inflammatory mediators (like cytokines and chemokines). In cases where inflammation persists beyond the initial response, it can cause tissue damage and chronic conditions such as rheumatoid arthritis, atherosclerosis, and inflammatory bowel disease (IBD). These are recognized as immune-mediated inflammatory disorders. In addition, inflammation in general and proteins with roles in inflammatory response, have been correlated with many human conditions, including mental health and cancer.

Understanding the immune system's function is vital, as these conditions can significantly impact health, causing chronic pain, inflammation, and increased vulnerability to infections. For example, "inflammaging", a chronic, low-grade inflammation that typically develops with aging is considered a key factor in the aging process and is associated with the onset of various age-related diseases. Chronic inflammation contributes to cardiovascular disease, Type 2 diabetes,





neurodegenerative diseases, cancer, autoimmune diseases, obesity and metabolic syndrome, and many others [22].

INFECTIONS/PATHOGENS

For the purpose of risk assessment, pathogens include both, infectious species (bacteria and viruses) and healthy gut bacteria (gut microbiome). Infections refer to the invasion and multiplication of pathogens such as bacteria, viruses, fungi, and parasites in the body, often resulting in illness. These infections can range from mild to life-threatening, depending on the pathogen, the host's immune system, and environmental factors. Some common infections include respiratory infections (e.g., pneumonia), gastrointestinal infections (e.g., salmonella), and systemic infections (e.g., sepsis).

In addition, to acute infections, some bacteria and viruses remain dormant within the host after the initial infection has resolved. These pathogens are not fully eradicated from the body but exist in a state of low or no activity, evading the immune system and reactivating under specific conditions, such as immunosuppression, stress, or aging. When reactivated, latent infections can contribute to various diseases, including cancers and other chronic conditions.

- Human Papillomavirus (HPV) is one of the most common viral infections linked to cancer. It can remain latent for years before causing abnormal cell growth, particularly in the cervix, leading to cervical cancer. HPV is also associated with head and neck cancers, anal, penile, and oropharyngeal cancers [23].
- Epstein-Barr Virus (EBV) is a herpesvirus, can remain latent in B cells after causing infectious mononucleosis. EBV reactivation has been linked to several cancers, including

nasopharyngeal carcinoma, Hodgkin's lymphoma, and Burkitt's lymphoma, as well as to the development of multiple sclerosis [24, 25].

- Hepatitis B and C Viruses (HBV, HCV) can cause chronic infections that lead to **liver cancer (hepatocellular carcinoma)**. Chronic inflammation and liver cell damage caused by the immune response to these persistent infections increase cancer risk [26].

The **microbiome**, a collection of trillions of microorganisms (bacteria, fungi, viruses, and others) living in and on the human body, particularly in the gut is integral to digestion, nutrient absorption, immune modulation, and protection against pathogenic microbes. However, dysbiosis—an imbalance in the microbiome—has been linked to several chronic diseases, including autoimmune conditions, mental health disorders, metabolic syndrome, and even certain cancers [27].

REPRODUCTIVE HEALTH

The reproductive age in humans typically spans from puberty through the late 40s, with a general range of 15 to 49 years. This period is marked by the peak fertility years and encompasses significant physiological and hormonal changes, as well as varying health and wellness considerations. Key health aspects during reproductive age include fertility, hormone balance, menstrual health in women, and sperm health in men, with implications for overall wellness, including mental and metabolic health.

During reproductive years, hormonal changes influence numerous body systems, impacting energy levels, mood, cardiovascular health, and metabolic processes. For instance, estrogen plays a protective role against cardiovascular disease and supports bone health in





women, while testosterone influences muscle mass, bone density, and libido in men. Health risks during this period include fertility issues, polycystic ovary syndrome (PCOS) in women, and lower testosterone or sperm quality in men.

Monitoring reproductive health through protein biomarkers can provide valuable insights into hormonal balance, fertility potential, and overall health. Regular biomarker monitoring can help individuals manage conditions like PCOS, thyroid dysfunction, and metabolic syndrome, which affect reproductive health. Additionally, biomarkers such as AMH and FSH can assist in proactive planning for those considering fertility preservation or treatment [28, 29].¹

ANGIOGENESIS

Angiogenesis is the process by which new blood vessels form from pre-existing vessels, primarily driven by factors like vascular endothelial growth factor (VEGF) and fibroblast growth factor (FGF). This process is vital for wound healing, tissue repair, and growth but can also contribute to disease. In cancer, for example, tumors can hijack angiogenesis to increase their blood supply, facilitating tumor growth and metastasis. Conversely, insufficient angiogenesis can lead to conditions like chronic wounds and cardiovascular disease due to impaired blood flow.

Monitoring biomarkers related to angiogenesis, can provide insights into vascular health and identify abnormal vessel formation. Elevated VEGF levels, for instance, are associated with cancer progression, while deficiencies in angiogenic factors may point to ischemic conditions. Biomarker monitoring aids are important in assessing therapeutic responses in cancer treatments aimed at inhibiting angiogenesis and supports

cardiovascular health management through early detection of vascular abnormalities [30].

PHYSICAL FITNESS

Physical fitness refers to the ability to perform physical activities and includes aspects like cardiovascular endurance, muscle strength, flexibility, and body composition. Regular physical activity improves cardiovascular health, muscle and bone strength, and mental well-being while reducing the risk of chronic diseases like obesity, type 2 diabetes, and hypertension. Physical fitness also plays a preventive role in reducing inflammation and oxidative stress, both of which are linked to aging and age-related diseases [31].

Biomarker monitoring can provide objective measures of physical fitness by providing information about systemic inflammation, muscle health (mass and strength) and recovery, and improved metabolic health. By tracking these biomarkers, individuals and healthcare providers can assess physical fitness levels, tailor exercise regimens, and monitor the effectiveness of interventions aimed at improving health outcomes [32].

Monitoring these can provide valuable information on physical health, muscle quality, and the effectiveness of fitness interventions. Together, they offer a detailed picture of an individual's physical condition and potential for maintaining muscle strength and metabolic efficiency.





Pandecta's Ultimate Goal

At Pandecta, we believe in proactive rather than reactive health management. Our goal is to help you make informed decisions about your health before issues arise. By providing detailed health insights, we enable you to take control of your well-being, avoiding, deferring, limiting, and treating many ailments.





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