Bio-Alai

From Molecular Mechanisms to Clinical Excellence

Title: “Nutrient Therapies in the Aesthetic Setting”

Full Course Overview

General: 8 core modules and 2 bonus modules
Online access to all modules for 12 months from purchase.
Slides are provided for all modules
Mini quiz on completion of modules 1-8
Official *Recognition of Completion* provided on request.
12+ CPD hours (self-directed)

FOUNDATIONAL MODULES

Module 1: The Foundations of Health and Longevity - The Gut Microbiome.

Key learnings for practitioners:

- Understand the link between aesthetic presentations and the foundational mechanisms that underlie chronic conditions, including dysbiosis, inflammation, metabolic dysfunction, and neuroendocrine alterations.
- Explore the hallmarks of ageing and the concept of inflammageing.
- Gain an introduction to the gut microbiome and the features of a healthy microbial composition.
- Identify the key microbial phyla and species involved in human health and longevity.
- Appreciate the crucial roles of microbial metabolites in supporting human physiology.
- Define the connection between dysbiosis and disease states, with a focus on obesity and chronic conditions that present with dermatological manifestations.
- Discuss the factors that influence the evolution and modification of the gut microbiome across the lifespan, including the unique microbiome of the super-centenarian.
- Understand the role of prebiotics and probiotics as microbial modulators.
- Recognise the different levels of scientific evidence and how to distinguish between media headlines and the fine print of research – an essential skill when choosing interventions to introduce into practice.

Module 2: The Gut-Skin Axis - The Microbiome in Aesthetic Presentations

Key learnings for practitioners:

- Recognise the biological complexity of aesthetic presentations.
- Understand the link between diet, the microbiome, and gut health.
- Explore the molecular mechanisms through which microbial metabolites regulate gut wall integrity and send systemic signals to support distal organs.
- Discuss how microbial metabolites interact with the innate and adaptive immune systems to maintain immune tolerance throughout the body.
- Explain the current understanding of the Gut-Skin Axis and how the microbiome contributes to skin homeostasis.
- Identify the connections between dysbiosis, leaky gut, inflammation, and aesthetic presentations.
- Examine the pathogenic role of endotoxin and specific microbial profiles in obesity as well as allergic, autoimmune, and inflammatory dermatological conditions.
- Review examples of the gut-skin connection in pathological states and how these may increase the risk of complications following cosmetic treatments.
- Outline how nutritional strategies can improve microbial composition and gut-skin communication pathways.
- Evaluate the evidence supporting the use of prebiotics, probiotics, vitamins, polyphenols, and amino acids as therapeutics for aesthetic conditions.

Module 3: Nutrients for Microbial Modulation and Epigenetic Reprogramming

Key learnings for practitioners:

- Understand the crucial role of nutrients in supporting human health and physiology.
- Recognise the extent of nutrient deficiencies and their relationship to aesthetic signs and symptoms.
- Define the epigenome and its key components.
- Explore the interaction between nutrients and the epigenome, and how this influences health outcomes.
- Introduce the concept of gene polymorphisms and their impact on nutrient processing and availability.
- Discuss the role of macronutrients, micronutrients, dietary compounds, and popular diets in shaping the microbiome.
- Explain how the microbiome contributes to nutrient status.
- Understand the processes of autophagy, cellular senescence, telomere attrition, and the dietary factors that regulate these mechanisms.
- Examine how nutrient deficiencies and certain dietary compounds (e.g. lectins, dairy) may contribute to aesthetic signs and symptoms.
- Review key findings from research on collagen powders.
- Learn what to look for when choosing supplements to recommend in practice.

Module 4: Supporting Mitochondria for Aesthetic Outcomes and Longevity

Key learnings for practitioners:

- Understand the mechanistic model of the hallmarks of ageing as a therapeutic framework.
- Review research highlighting the crucial role of mitochondria in longevity.
- Explore mitochondrial functions including energy production, oxidative stress management, and regulation of cellular homeostasis.
- Discuss how nutrients regulate mitochondrial processes and act as essential cofactors in the mitochondrial chain.
- Introduce and expand on the concepts of autophagy and mitophagy.
- Examine the antioxidant pathways involved in scavenging free radicals and reducing oxidative stress.
- Explain the bidirectional relationship between the gut microbiome and mitochondria, and how this interaction supports longevity under physiological conditions.
- Define the pathogenesis and prevalence of mitochondrial dysfunction.
- Explore the role of mitochondrial dysfunction in ageing and aesthetic presentations, with a particular focus on lipedema.
- Discuss the limitations of current research into the effects of oral nutrients on health and aesthetic outcomes.
- Evaluate evidence-based nutritional strategies to optimise mitochondrial function

Module 5: Nutritional Interventions to Support Detoxification Pathways

Key learnings for practitioners:

- Understand how and why toxin exposure is increasing, and why so-called “safe” levels may not actually be safe.
- Recognise the importance of supporting detoxification to reduce oxidative stress and prevent the wide range of signs and symptoms linked to toxicity.
- Review the evidence connecting toxin exposure with endocrine and metabolic disorders.
- Identify the hidden sources of toxins in food and nutraceuticals, and how these impact the gut microbiome.
- Explain why artificial sweeteners can be just as harmful as sugar.
- Explore the relationship between advanced glycation end products (AGEs), polycystic ovarian syndrome (PCOS), and skin ageing.
- Summarise the detoxification pathways in the gut and liver, and the nutritional compounds that support these processes and prevent toxin recycling.
- Discuss the role of antioxidants and dietary interventions in reducing oxidative stress during weight loss.
- Understand the Gut-Liver Axis and the pathogenesis of fatty liver disease.
- Examine the link between fatty liver disease and aesthetic presentations.
- Learn the systematic steps of detoxification and how to support the process with targeted nutritional strategies, nutrients, and antioxidants.

Module 6: Weight Management for Health and Longevity

Key learnings for practitioners:

- Recognise the complexity of weight management and the importance of a multisystem approach.
- Identify the key factors that influence energy balance and appetite control.
- Understand how the body utilises and stores energy, and what disrupts these processes.
- Explore the many signals involved in hunger and satiety, and how they can become dysregulated.
- Discuss perspectives on the Set-Weight Theory and weight homeostasis maintenance.
- Examine the roles of ghrelin, leptin, and insulin, along with the modifiable factors that regulate them.
- Appreciate the importance of optimising glycaemic control and the microbiome's role in regulating it.
- Explain how leptin and insulin resistance develop and how these states influence body weight and aesthetic presentations.
- Differentiate between adipose tissue subtypes including white, brown, beige, obese, and lipedema fat.
- Understand the mechanisms by which the body burns fat and the factors that assist this process.
- Explore the multiple roles of the gut microbiome in weight regulation.
- Recognise the multifactorial causes of resistance to fat loss.
- Discuss the value of personalised nutrition and precision medicine, including tests

Module 7: The Gut-Brain Axis - Optimising Brain Function & Neuroplasticity

Key learnings for practitioners:

- The Gut-Brain Axis and how the gut microbiota communicates with the brain.
- How a healthy gut microbiome influences mood, behaviour, cognitive performance, neuroplasticity, and habit formation.
- Explore the concept of vagal tone and review evidence supporting vagal stimulation in stress-related disorders.
- Describe the pathways and dietary factors that contribute to neuroinflammation.
- Examine the evidence linking dysbiosis to mood disorders, cognitive decline, altered stress responses, sleep disturbances, and addictions.
- Explain the stress Gut-Brain-Skin connection in relation to aesthetic presentations.
- Explore the role of oestrogen in skin health.
- Understand the pathogenesis of food addiction and the importance of overcoming maladaptive behaviours for health and longevity.
- Discuss the role of neuroplasticity in habit formation and the factors that influence it.
- Summarise the evidence for nutritional strategies that optimise brain function to support the development and maintenance of healthy habits////

Module 8: Injectable Nutrients in The Aesthetic Setting

Key learnings for practitioners:

- The physiology of nutrient processing and the organ-specific and/or systemic benefits of nutrients.
- The mechanisms of action and indications for injectable nutrients relevant to skin, energy, and metabolic health based on current evidence.
- The indications and key relevant learnings for injectable:
    - NAD and NAD boosters
    - Glutathione
    - Vitamin C
    - B-vitamins
    - Vitamin D
- How to perform a comprehensive patient assessment, including testing, precautions and contraindications for each nutrient.
- Medico-legal, safety and regulatory considerations, as well as ethical prescribing in an aesthetic setting.
- Where oral and injectable approaches may complement each other in patient management
- Where to find practical training and reputable suppliers.

Bonus Module 1: Aesthetic Presentations in Perimenopause

Key learnings for practitioners:

- Common aesthetic presentations during perimenopause with a focus on skin aging.
- The role of estrogen in gut and skin health and the pathways through which estrogen decline accelerates skin aging and weight gain.
- The impact of estrogen deficiency on the hallmarks of aging – in particular epigenetics, mitochondrial function and nutrient sensing - and how this translates to variations in the rate of aging between women of the same age.
- The interplay between hormones, immune function, metabolism and brain health.
- The impact of neuroinflammation in stress-related skin disorders.
- Therapeutic fasting protocols targeting the hallmarks of ageing to delay and/or reverse visible and physical decline.
- Evidence for phytonutrients, antioxidants, omega-3 fatty acids, and micronutrients in supporting skin and systemic health.
- Dietary recommendations to optimise aesthetic outcomes during perimenopause.

Bonus Module 2: The Gut–Brain–Skin Connection

This module summarises some of the concepts in modules 1-8 and expands on the gut-brain-skin connection in rosacea, acne and psoriasis:

- The role of the microbiome in health – how microbial diversity influences digestive health, cognitive function, mood, and skin physiology.
- How gut dysbiosis triggers systemic inflammation, leading to metabolic and dermatological presentations.
- The gut–brain–skin axis in clinical practice – the complex interplay between dysbiosis, stress, and inflammatory pathways in conditions such as rosacea, acne, and psoriasis.
- Neuroinflammation and neuroendocrine signalling – the impact of stress, mood disorders, and HPA-axis dysregulation on skin barrier function, sensitivity, and inflammation.
- Dietary strategies for skin health – the impact of nutrition on the gut microbiome, including anti-inflammatory diets, polyphenols, and the role of fibre.
- Prebiotics and probiotics – evidence-based applications for modulating gut flora to improve skin outcomes.
- Therapeutic strategies – nutritional and integrative approaches that target the gut–brain–skin axis to enhance patient outcomes in aesthetic settings.