

## Description of ECARE Fellowship knowledge

### 1. Introduction of Public Health basics

- Overview in epidemic changes in health systems of Europe, Asia & America
- Medical economics and Prevention
- Socio-economic aspects of prevention, migration, social status in Asia
- Concepts of Primary, secondary and tertiary prevention
- Prevention in the hospital and medical practice
- Evaluation of health projects, Terms of epidemiology, Interpretation of scientific data
- (biostatistics), Prevention and Anti-aging medicine an investment in to the future.

### 2. Basics of Immunology

- Basics of the immunology
- Aging Immune system including practical clinical parameters of assessment
- Theory of Th1/Th2 Regulation,
- Inflammaging, Silent inflammation impact on Th1/Th2 Regulation
- Theory of allergy
- Theory of autoimmunity
- Nitrosative stress. Impact of nitrosative stress on Th/Th2 Regulation, chronic intracellular infections and genesis of CFS, MCS
- Impact of neurostress on different aspects of the Immune system , methods of diagnosis & treatment
- Mitochondrial Medicine, Prophylaxis & Treatment of mitochondrial deficiency

### 3. Functional Nutritional medicine

- Basis of nutritional science, physiology of digestion, hormones regulating hunger (leptincycle etc.) and energy balancing. Diets in industrialized countries, difference between ancestral diets and present nutritional habits, evaluation of food supply, food sources of micronutrients, principles of supplementation (the emerging role of nutritional supplementation in medicine)
- Basics of Food borne disease
- Environmental load of nutrition
- Nutritional recommendations, Energy balance, Assessment of proper nutritional supply,
- Estimated Calorie Requirements, Clinical tests in functional nutritional medicine (Body Impedance), BMI
- Macronutrients compounds of nutrition: fats, proteins, carbohydrates, water, fat related compounds, essential fatty acids, Understanding fats and oils, Omega 3: Omega 6 fatty acids, phospholipids, Choline and lecithin, Natural food sources (vegetables and fruits, meat, milk and dietary products, fish, cereals, salt)
- Food technology including health effects of preservatives and food additives, flavor
- additives, novel food, diet products, formula diets,
- Food safty regulations (RDA), practical recommendations

- Different diets in comparison Malnutrition, biomarkers of malnutrition, Body impedance analysis
- Food intolerance: Gluten intolerance, carbohydrate intolerance, breath gas analysis of lactose intolerance, fructose malabsorption, fat intolerance, histamine intolerance, Food allergy, concept of IgG-IgE related food intolerance, impact of food intolerance on Th1/Th2 Immune system, Concepts of treatment, Clinical applications of food intolerance (it asthma, headache, rheumatism)
- Micronutrition in different life cycle episodes
- Nutrition in cancer (Warburg phenomenon)
- Brain food, implications in neurodegenerative disease
- Micronutrients in the Prevention and Therapy of Disease: Basic principles of micronutrients, mechanism of action, variability in micronutrient requirements among individuals, micronutrients in the diets of industrialized countries,
- Fat-Soluble Vitamins
- Water soluble Vitamins
- Probiotics including History taking, and physical exam techniques for assessing dysbiosis
- Essential trace elements (Zinc, Copper, Molybdenum, Chromium, Iodine, Selenium,
- Fluoride)
- Minerals (Calcium, Magnesium, Potassium, Iron)
- Accessory nutrients: Coenzyme Q 10, Fiber supplementations, Lipoic acid, Sadenosylmethione (SAM)

#### 4. Environmental medicine

- Risk assessment in environmental medicine ; Human Biomonitoring, Sick building disease
- Risk from metal contact (Amalgam, Titanium, Nickel)
- Concepts of detoxification (phase related detoxification) Total Glutathione-S-transferase activity, GST  $\mu$ , GST p1, GST M1, P1, T1, p 450 cytochrome activity, caffeine clearance, basics and clinical applications
- Supplementation in favour of Phase I+II Detoxification

#### 5. Laboratory medicine

Terms of assessment: in Laboratory medicine; Introducing different new lab techniques (blood spot test; saliva spot technique, urine spot technique), LTT Melisa, functional immunological panels ( Natural killer cell function, Tumour killing test, Pro-Inflammatory cytokine status). IL2-R-Test,

Assessment of oxidative stress, Intracellular Glutathione levels, NF-kappa  $\beta$ , Antioxidative capacity, lipid peroxidation, 8-OH-Desoxyguanosine, Superoxide dismutase, Glutathione peroxidase

Test in functional nutritional medicine: Breath gas analysis, genetic proof of LCT-gene mutation, hereditary fructose intolerance (genetic test), Anti-transglutaminase in stool & serum samples, genetic determination for Celiac disease (HLADQ 2, HLADQ 8),

Measuring Diaminoxidase activity in histamine intolerance, gliadomorphines &

caseomorphines in urine, histamine levels in urine and stool samples, Proof of intestinal allergic reaction by EPX, alpha-1-antitrypsine, calprotectin, Determining chronic bowel inflammation by PNM-Elastase and Lysozyme activity in stool samples, pseudallergic screening for food additives in serum, Determining the Pool of fatty acids ( $\Omega 3$ : $\Omega 6$ - Ratio)

Neurostress: Catecholamines (Adrenaline, Noradrenaline, Dopamine), Glutamine, GABA, Serotonin, Cortisol profile in saliva and urine

Assessment of neurodegeneration by advanced lab techniques: Biomarkers: S100, Apo E, MBP-Peptides, MOG-Peptides,

Mitochondrial Medicine: Citrulline, Nitrotyrosine, Measuring mitochondrial activity, Acid base balancing according to Sander, Kryptopyrrol in urine samples

Cardiovascular risk assessment: ADMA, homocysteine, Lp(a), oxidized LDL, Vitamin C levels, sCRP

## **6. Clinical applications**

Protocols in nutritional medicine

Protocols in immunology

NK cells and NK cell activity

T- cells and B- cells subgroups and regulation during aging