

# Precision Nutrition

## Report Form 2019



**IUNS**  
INTERNATIONAL  
UNION OF  
NUTRITIONAL  
SCIENCES

## Task Force Chair/s

J Alfredo Martinez (E) and Martin Kohlmeier (USA)

## Task Force Members

- Jose L Santos (Chile)
- Omar Ramos-Lopez (MEX)
- Ben van Ommen (NL)
- Carlos Celis-Morales (UK)
- Katherine M Livingstone (AUS)

## Summary of activities in 2019

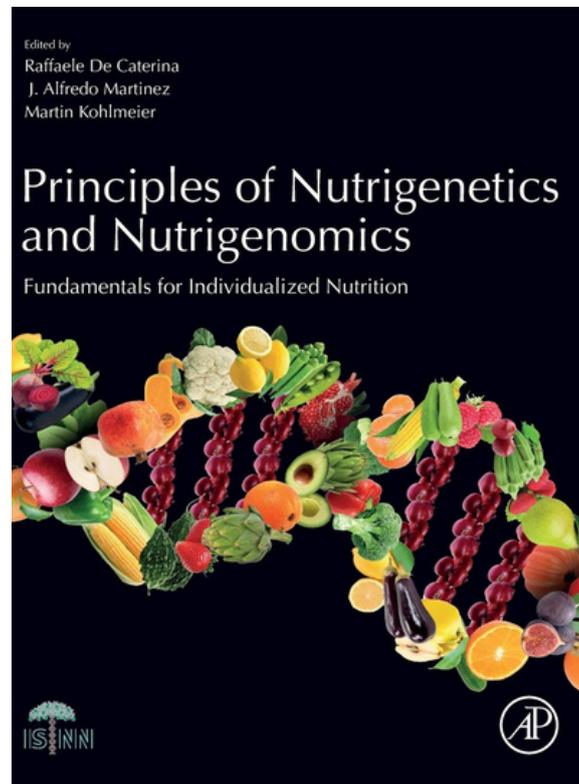
1. Congress Presentations with IUNS Visibility
2. Textbook about Principles of Nutrigenetics and Nutrigenomics
3. Articles with IUNS acknowledgements including some abstracts in Congresses Proceedings

## Summary of activities in 2019

The emerging concept of Precision Nutrition was developed to understand interindividual nutritional differences in healthy subjects as well as for a personalized management of metabolic syndrome features such as obesity, diabetes, dyslipemia, hypertension and cardiovascular disease as well as targeting in cancer nutritional care and other chronic metabolism-related diseases.

In particular, precision nutrition underlies advances on nutrigenetics, deep phenotyping, family and personal clinical cues interpretation, perinatal nutrition influences and a potential wide acquisition and processing of data concerning metabolic personalization through omics technologies (genomics, transcriptomics, metabolomics, epigenomics, metagenomics, system biology and others), whose possibilities and practical implementation require to be re-appraised and updated for a suitable value. Indeed, the conceptual framework encompassing Precision Nutrition based on assessing the interindividual heterogeneity caused by genetic/epigenetic and metabolism dissimilarities, the lifestyle and environmental exposome diversity, microbiome variations, and singular behavioral/psychological features concerning personality involve clear implications on health outcomes to harmonize personal and population challenges and applications.

In that context, Precision Nutrition should consider updated individualized nutritional indicators for metabolic care and Nutritional status, not only in patients, but also in healthy subjects. Similarly, it is necessary to take into account the development of new transcriptomic biomarkers, lipidomic approaches and metabolomic tools as well as pharmacogenetic strategies and metagenomic applications for customized health needs. Also, the origins and developmental issues concerning health and disease or epigenetics in line with the DOHaD theory are of interest in Precision Nutrition including specific aspects on obesity and Metabolic Syndrome features related to diverse diseases. In the last years, personalized nutrition investigations considering individual factors such as age and gender, food preferences and intolerances, nutrigenetic interactions associated to genetic variants involving individualized utilization of macronutrients and micronutrients or energy metabolism have been addressed by scientific journals but need to be analysed and integrated. Concerning clinical precision perspectives, articles related with the role of the microbiome on precision nutrition, the development of personalized biomarkers, targeted metabolomics, applications for weight or food allergies management or a role on inflammation are being continuously published. Indeed, precision nutrition integrates information based on genetic/epigenetic background, personalized clinical and phenotypical features including own psychological/personality attitudes, specific food allergies and intolerances, differential cultural, social and environmental backgrounds, drug-side effects, personal dietary preferences as well as singular lifestyle and environmental factors that need to be addressed for a solid individualized Nutrition and Medicine, including the definition of new obesotypes and individual nutritional qualitative factors and quantitative nutrimeric scores. The baseline status associated with several metabolic disturbances may be diagnostic or predictive as a basis to prescribe tailored interventions. Ethical and regulatory issues are needed to be developed and implemented for sustainable growth of nutrition endeavours and methodologies, where important achievements and challenges are expected for combining global population and personal health benefits with the support of bioinformatics focusing on the use of machine learning and artificial intelligence.



Also a seminar was provided BY IUNS in the 13th ISNN Congress at Cambridge ( July 2019) In collaboration with M Kohlmeier



## ARTICLES and ABSTRACTS

1: González-Muniesa P, Martínez JA. Precision Nutrition and Metabolic Syndrome Management. *Nutrients*. 2019 Oct 9;11(10). pii: E2411.

2: Ramos-Lopez O, Riezu-Boj JI, Milagro FI, Cuervo M, Goni L, Martinez JA. Models Integrating Genetic and Lifestyle Interactions on Two Adiposity Phenotypes for Personalized Prescription of Energy-Restricted Diets With Different Macronutrient Distribution. *Front Genet*. 2019 Jul 30;10:686.

- 1: González-Muniesa P, Martínez JA. Precision Nutrition and Metabolic Syndrome Management. *Nutrients*. 2019 Oct 9;11(10). pii: E2411.
- 2: Ramos-Lopez O, Riezu-Boj JI, Milagro FI, Cuervo M, Goni L, Martinez JA. Models Integrating Genetic and Lifestyle Interactions on Two Adiposity Phenotypes for Personalized Prescription of Energy-Restricted Diets With Different Macronutrient Distribution. *Front Genet*. 2019 Jul 30;10:686.
- 3: Celis-Morales C, Livingstone KM, Petermann-Rocha F, Navas-Carretero S, San-Cristobal R, O'Donovan CB, Moschonis G, Manios Y, Traczyk I, Drevon CA, Daniel H, Marsaux CFM, Saris WHM, Fallaize R, Macready AL, Lovegrove JA, Gibney M, Gibney ER, Walsh M, Brennan L, Martinez JA, Mathers JC; Food4Me Study. Frequent Nutritional Feedback, Personalized Advice, and Behavioral Changes: Findings from the European Food4Me Internet-Based RCT. *Am J Prev Med*. 2019 Aug;57(2):209-219.
- 4: Taberna DJ, Navas-Carretero S, Martinez JA. Current nutritional status assessment tools for metabolic care and clinical nutrition. *Curr Opin Clin Nutr Metab Care*. 2019 Sep;22(5):323-328.
- 5: Lorente-Cebrián S, González-Muniesa P, Milagro FI, Martínez JA. MicroRNAs and other non-coding RNAs in adipose tissue and obesity: emerging roles as biomarkers and therapeutic targets. *Clin Sci (Lond)*. 2019 Jan 3;133(1):23-40.
- 6: Arpón A, Milagro FI, Ramos-Lopez O, Mansego ML, Santos JL, Riezu-Boj JI, Martínez JA. Epigenome-wide association study in peripheral white blood cells involving insulin resistance. *Sci Rep*. 2019 Feb 21;9(1):2445.
- 7: van den Brink W, van Bilsen J, Salic K, Hoevenaars FPM, Verschuren L, Kleemann R, Bouwman J, Ronnett GV, van Ommen B, Wopereis S. Current and Future Nutritional Strategies to Modulate Inflammatory Dynamics in Metabolic Disorders. *Front Nutr*. 2019 Aug 26;6:129

In addition, several abstracts and communications have appeared as Proceedings of the Congresses such as Lifestyle Genomics, Annals Nutrition and Metabolism, Asian Pacific Clin.

## PRESENTATIONS IN CONGRESSES

**XVII Curso de Inmunonutrición**  
en la Salud y el Bienestar

Salón de Actos ICTAN  
28 Enero-1 Febrero **Madrid**  
2019

**Nutrigenética: Bases y aplicaciones**

*Prof. J. Alfredo Martínez*

**ciberobn**  
Centro de Investigación Biomédica en Red sobre Enfermedades Crónicas

**idea**  
alimentación

Universidad de Navarra

50 años

Zaragoza, Junio 2019

**MABS**

**El vínculo entre genética, nutrición y salud**

Dr. J. Alfredo Martínez

**idea**  
alimentación

Universidad de Navarra

**ciberobn**

XXVIII Reunión de la Sociedad Española de Nutrición

Salud y bienestar: investigando en nutrición

**SORIA**  
20-22 de junio de 2019

VI REUNIÓN DE JÓVENES INVESTIGADORES

**Nutritipos y bienestar nutricional**

Dr. J. Alfredo Martínez

**idea**  
alimentación

Universidad de Navarra

**ciberobn**



## IUNS task force efforts for better NGx education and practice

Prof. J.Alfredo Martínez



## Nutriomic Applications using cutting-edge technologies for well-being

Prof. J. Alfredo Martínez

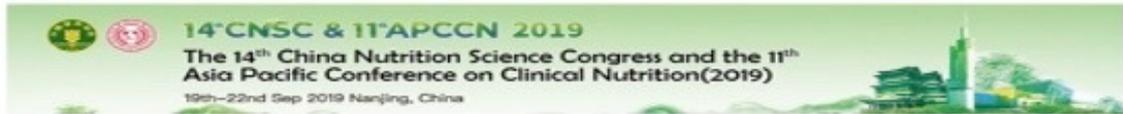


The 4th FANUS Conference  
"Nutrition in Action for Sustainable Development in Africa"  
Kigali, Rwanda  
August 26th-29th, 2019

## International Union of Nutritional Sciences (IUNS) PRECISION NUTRITION TASK FORCE

Profesor J. Alfredo Martínez





## Gene x Microbiota Interactions In obesity

Professor J. Alfredo Martínez



**13th European Nutrition Conference**  
FENS 2019 | Malnutrition in an Obese World: European Perspectives  
The Convention Centre Dublin, Ireland  
16 - 19 October 2019



## PERSONALIZED OMICS INTERVENTIONS

Prof. J. Alfredo Martínez



Primer Congreso Internacional de Avances en Nutrición 2019



*"Nutrición traslacional, del fundamento científico a la persona y a la comunidad"*  
*"4-7 noviembre / Lima, Perú"*

## Nutrición personalizada basada en la genética

Prof. J Alfredo Martínez



## Plans for the Next Year

The plans for next year include the preparation of a Review about Precision Nutrition as well as to try to increase IUNS visibility through Advertorials and series in Important journals as well as Presentations in different congresses besides collaborations with other projects