

# NEW TOOLS TO IMPROVE NUTRITION AND HEALTH

AN ENGAGED AND HEALTHY CONSUMER

FOOD 2030: NUTRITION



Innovative and high-performance technologies are revolutionising medical research with their ability to assess individual health indicators, and thus allow the examination of multiple human and environmental conditions simultaneously. This is proving powerful in targeting and preventing human diseases more accurately.

## SPECIFIC R&I BREAKTHROUGH TOPICS

**Personalised nutrition:** Personalised nutrition is based on the use of genetic, phenotypic, medical, nutritional, and other relevant information about individuals to deliver specific and targeted advice, products, or services, to achieve a dietary behavioural change proven to be beneficial for health. Consumers are increasingly more proactively involved in the design and production of the food they purchase through co-creation and innovative technologies.

**Multi-Omics:** Starting from genomics, transcriptomics, proteomics, and metabolomics; a variety of omics subdisciplines (epigenomics, lipidomics, interactomics, metallomics, diseasomics, etc) has emerged, offering the opportunity to understand the flow of information that underlies disease. Foodomics is a new, comprehensive approach to food and nutrition that intends to correlate the intrinsic food characteristics (for example related to food composition, biochemical properties of active ingredients, food processing and technologies used in food production), with the impact on human health.

**Nutraceuticals:** Nutraceuticals refer to dietary supplements, functional food, medicinal food, and pharmaceuticals. They have attracted considerable interest due to their potential nutritional, safety, and therapeutic effects in improving health, preventing chronic diseases, postponing the aging process, and generally supporting body functions and integrity.

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**Functional foods:** Functional foods exert specific health benefits on the human body, that extend beyond those associated to nutritional value, improving overall human health status, and reducing the risk of certain diseases. Functional products refer to several categories of foods; conventional foods that are naturally rich in nutrients like vitamins, minerals, antioxidants and heart-healthy fats; food fortified with additional nutrients (eg juices); food enriched with new ingredients (eg pre- and probiotics); or food altered by removing/reducing/replacing particular components.

**Human genome knowledge and application:** Gut, oral, respiratory, and skin microbiomes play an important role in shaping an individual's response to diet, and have the capacity to rapidly respond to environmental factors like diet, lifestyle, and climate.

## EXPECTED IMPACT

Further knowledge of human health - and the tools available to measure and -influence nutrition and healthy eating habits. Indeed, personalisation may foster a sustained change in dietary and purchasing behaviour, and is likely to drive scientific developments which are beneficial for public health. The application of multi-omics technologies, through the adoption of a foodomics approach, integrates multiple levels of research and models, and allows the closure of knowledge gaps and the optimisation of human health.

## MARKET OPPORTUNITIES / CHALLENGES

- The market for personalised nutrition is expanding, as it attracts both people suffering from a disease, and healthy people willing to monitor their health parameters. The widespread use of fitness watches and similar applications demonstrates this.
- Market demand for new tools is driven by consumers concerns about health risks. There are perceptions that the pursuit of wellness and a good fitness condition is a top priority, especially for the emerging middle class.
- A foodomics approach to multi-omics technologies can help multi-background researchers and scientists in the area of food science and nutrition to have better access to data. This improve in food safety, new foods formulation, and animal nutrition, and lead to a better understanding of the impacts of environmental exposure.
- Developing microbiome-based dietary interventions can be a cost-effective measure to prevent diet-related diseases and can improve human lifestyle by modulating individual eating behaviours.
- Translating human genome sequencing into medical therapies that will benefit individuals requires strategies to handle large amounts of biological and medical data.

## EXAMPLE REFERENCES

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## ASSOCIATED TRENDS IN FIT4FOOD2030 (URL)

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| ○ Rise of non-communicable diseases             | ○ Special diets like vegetarian, vegan or low carb |
| ○ Demographic changes                           | ○ Fast and convenient food                         |
| ○ Biofortification                              | ○ Smart personalised foods                         |
| ○ High/Ultra processed foods                    | ○ Globalisation of diets                           |
| ○ Clean eating / transparent labels             | ○ Consumer engagement                              |
| ○ Novel foods                                   | ○ Traditions and do it yourself (DIY)              |
| ○ Functional foods including pro and prebiotics | ○ Social media and food                            |
| ○ Health and food consciousness                 | ○ Food regulation                                  |
| ○ Responsible consumers                         |  |



#### ASSOCIATED CASES IN FIT4FOOD2030 (URL)

- MinorHealthyCereals
- Habit
- Tellspec
- Sugarlogix
- Calxyt

