



VITAGORA®

TASTE-NUTRITION-HEALTH Core Capabilities and Projects

TASTE-NUTRITION-HEALTH

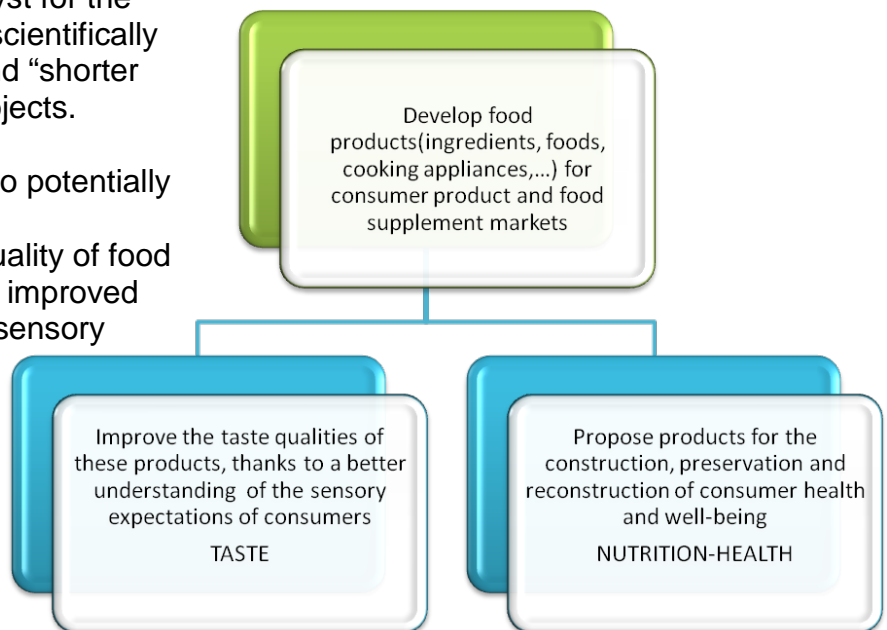
An innovation strategy focused on the Consumer

Vitagora®'s goal is to become Europe's leading R&D centre for the development of manufactured food products (consumer products and dietary supplements) promoting both enjoyment and healthy eating.

Vitagora® aims to be a catalyst for the development of "long term" scientifically centred research projects and "shorter term" industry innovation projects.

This ambition is based on two potentially linked ideas:

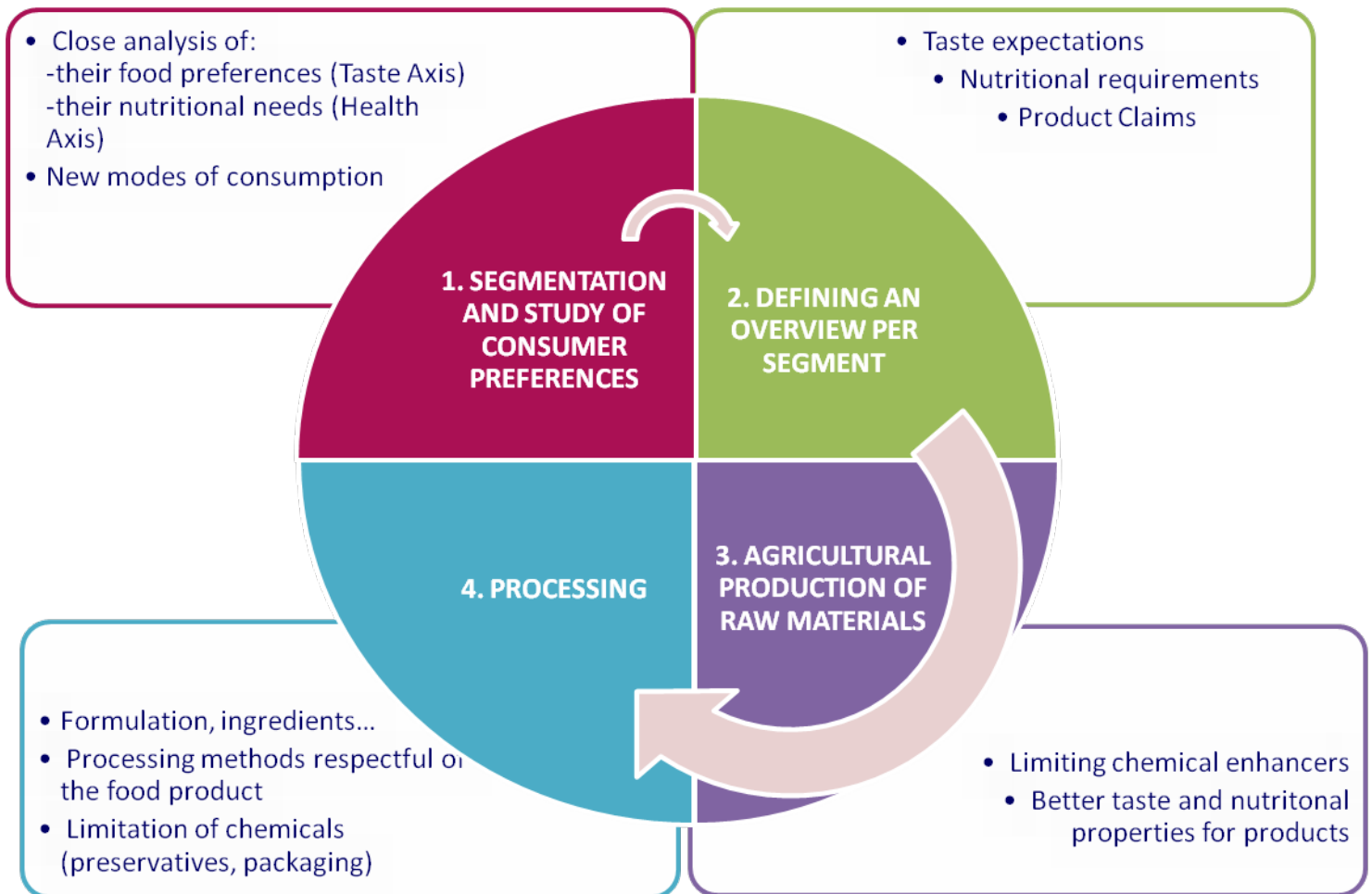
- Improving the taste quality of food products thanks to an improved understanding of the sensory expectations of consumers.
- Proposing new products that contribute to the construction, preservation and reconstruction of consumer health.



THE CONSUMER:

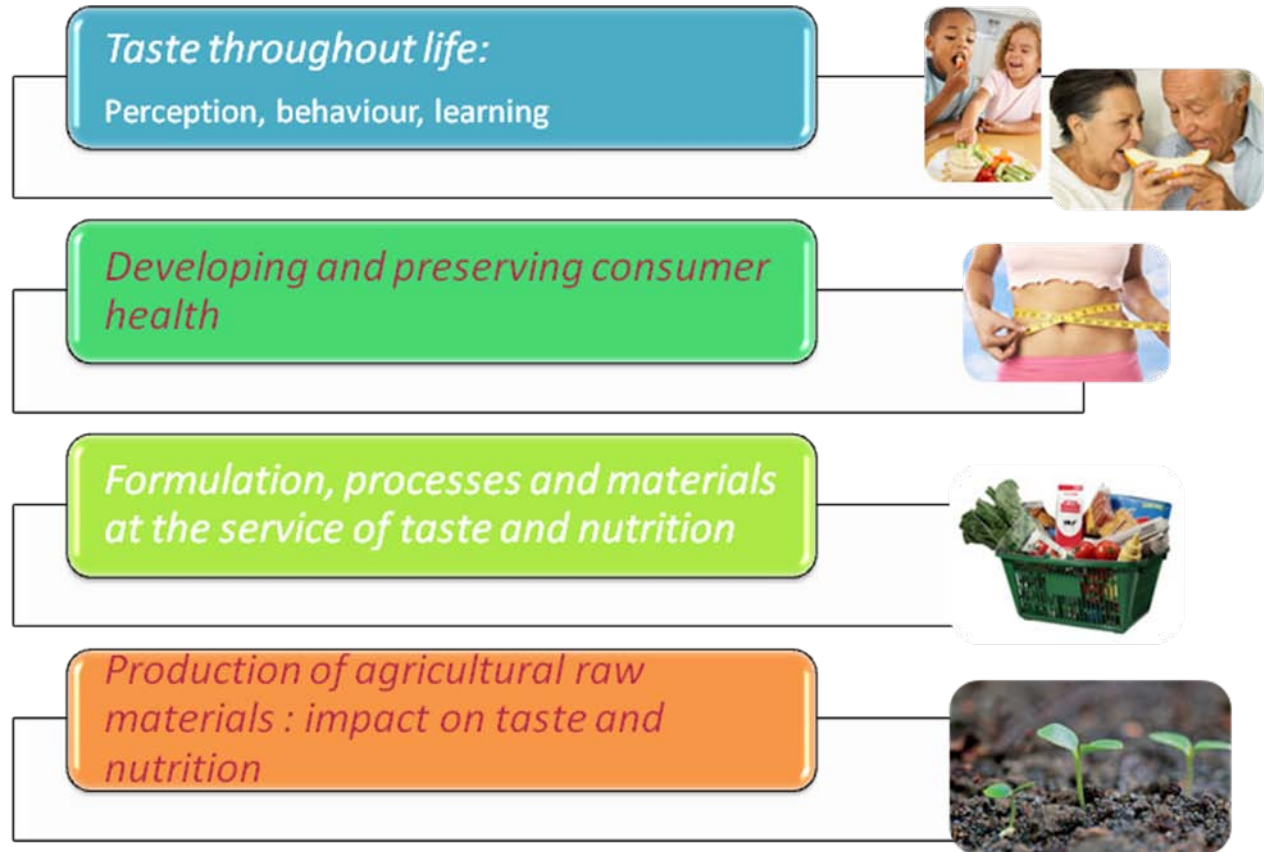
At the centre of scientific and technical processes respecting good health and the environment

Combining Vitagora[®]'s strategy with key areas of scientific excellence within the network, especially world class expertise in "Taste", Vitagora[®] is able to initiate an important evolution in developing food products, placing the consumer at the centre of scientific and industrial processes that respect both public health and the environment.



4 AXES OF SCIENTIFIC RESEARCH UNDERLYING VITAGORA®'S STRATEGY

Using the consumer-driven strategy as a starting point, four axes of scientific research have been defined:



AXIS 1

TASTE THROUGHOUT LIFE

Perceptions, behaviour, learning

The key focus of Vitagora's strategy is Taste. Our network brings together experts in the science of taste capable of studying food preferences, consumer behaviour, the physiology of flavour perception, and also flavour composition and analysis.

The central question of taste is treated with a multidisciplinary approach with the input of key research expertise from a number of teams (a total of 13 research teams and two technology platforms), from food structure to consumer psychobiology.



A few projects

- OPALINE
- EDUSENS
- PLEASANT TO DRINK TAP WATER
- FLOUR +

PROJECT 1
OPALINE

Observatory of Food Preferences in babies and toddlers

● Axis 1 Taste throughout life

Aim:

To understand the origin of the diversity of food preferences by observing the evolution of taste from birth to age two
To improve eating habits of children

Expertise:

Sensory Evaluation
Biology
Psychology
Human Health
Sociology
Ethology
Statistics



PROJECT 2
EDUSENS

Effect of a sensory education on the dietary preferences and habits of children from 8 to 10 years old

● Axis 1 Taste Throughout life

Aim:

To establish scientifically the extent to which a sensory education can modify children's food preferences and study the impact of this education and evaluate the change in food preferences.

Expertise:

Sensory Evaluation
Psychology
Sociology
Education Science
Statistics



PROJECT 3

PLEASANT TO DRINK TAP WATER

Neutralizing the taste of chlorine and understanding consumer preferences regarding tap water

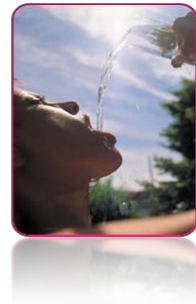
- Axis 1 Taste throughout life
- Axis 3 Formulation, processing and materials at the service of taste and nutrition

Aim:

The addition of chlorine is a necessary step to guarantee the sanitary quality of distributed water. The taste of chlorine is today the biggest complaint concerning tap water. The objective of this project is thus to find a system of neutralization of the taste of chlorine, in order to increase the regular consumption of tap water.

Expertise:

Sensory Evaluation
Taste Perception
Consumer Preferences
Water and Environment
Masking Agents and Flavour



PROJECT 4

FLOUR+

Optimization of Taste and Nutrition in the Wheat-Flour-Bread sector

- Axis 1 Taste throughout life
- Axis 2 Developing and preserving consumer health
- Axis 3 Formulation, processing and materials at the service of taste and nutrition
- Axis 4 Production of agricultural raw materials: impact on taste and nutrition

Aim:

To implement a characterization method for wheat varieties according to their nutritional and sensory potential. The program also follows the nutritional and sensory evolution of bread products throughout the wheat-flour-bread sector

Expertise:

Agriculture
Microbiology of Soils and Environment
Process Engineering
Consumer Food Preferences
Clinical Studies and Health Claims
Nutrition of Seniors

OTHER SKILLS AND CAPABILITIES

Axis 1 Taste throughout life:

- Experimental economy: decision, desire, motivation, social status and satisfaction
- Neurophysiology of olfaction: memorization of olfactory signals, mechanisms of reception and detection of chemical compounds of our environment and in particular those involved in the recognition of sapid substances
- Integrational neuroscience and clinical studies: neuroscience, behaviour, neurobiology, cellular physiology, cognitive sciences. Changes caused by toxins, pharmacological treatments or pathologies of psychiatric or neurological order. Emotional processes and interactions with the sensory and cognitive functions.
- Learning and Development: Representation of food for the elderly,
- Study of the understanding and the acceptance of the nutritional messages of public health agencies, Development and acceptance of "play" products for children
- Intellectual imaging and consumer food preferences

AXIS 2

DEVELOPING AND PRESERVING CONSUMER HEALTH

The segmentation of consumers and product tailoring requires an understanding of the nutritional needs of every type of consumer and the development of food products adapted to those needs. In these domains Vitagora® offers leading scientific skills (a total of 200 researchers in and around Dijon): lipid nutrition, antioxidants and anti-free radical defences, probiotics, toxicology.

PROBIOTICS



VITALIM'SENIOR

SENSOFAT

EXICHOL



A few projects:

- PROBIOTICS
- VITALIM'SENIOR
- SENSOFAT

PROJECT 1

PROBIOTICS

A new generation of functional probiotic products for the hydrated and dehydrated sectors

- Axis 2 Developing and preserving consumer health
- Axis 3 Formulation, processing and materials at the service of taste and nutrition

Aim:

To strengthen the probiotic function of microorganism strains throughout the manufacturing stages of fermented milk products and dietary supplements.

Expertise:

Physiology and genetics of probiotic bacteria by understanding the response mechanisms of biological cells subjected to various types of disturbance



PROJECT 2

VITALIM' SENIOR

Development of nutraceuticals for the prevention and treatment of weight gain in seniors

- Axis 1 Taste throughout life
- Axis 2 Developing and preserving consumer health
- Axis 3 Formulation, processing and materials at the service of taste and nutrition

Aim:

To develop drinks and dairy-based products with health claims targeting the prevention and treatment of weight gain in seniors.

Expertise:

Nutri-genomics (interaction between nutrients and the genome)
The study of natural defence mechanisms in humans
Natural anti-oxidants
Metabolism of lipoproteins



PROJECT 3

SENSOFAT

Role of the fatty acid transporter (FAT) CD36 in the detection of lipids on the tongue, intestine and brain: impact on dietary habits and health

- Axis 1 Taste throughout life
- Axis 2 Developing and preserving consumer health
- Axis 3 Formulation, processing and materials at the service of taste and nutrition

Aims:

To establish the role of FAT (Fatty Acid Transporter) CD36:

- 1) in the detection of fatty acids in food in organs involved in lipid homeostasis.
- 2) in the development of obesity.

= > limit the consumption of foods rich in lipids.

Expertise:

Physiology of nutrition - orosensory perception of lipids

Lipids and cellular signalling

Human genetics

Taste and the brain



OTHER SKILLS AND EXPERTISE

Axis 2 Developing and preserving consumer health:

- Oestrogens,, gene expression and pathologies of the Central nervous system; oncogenesis - endocrinology - functional neuroanatomy - regulation of gene expression - protein associated with the receiver GABA
- Epithelial carcinogenesis: predictive factors and forecast: mechanisms of oncogenesis, risk factors of epithelial cancers (lifestyle, nutrition)
- Cardiovascular physiopathology and prevention
- Separative, biological and pharmaceutical sciences: vectorisation, nutrients, cellular metabolism ...
- The eye and Nutrition

AXIS 3

FORMULATION, PROCESSES AND MATERIALS AT THE SERVICE OF TASTE AND NUTRITION

Innovate throughout the food transformation process to production: A real challenge for the agrifood industry.

Adding value to a food product requires the preservation of the most beneficial natural compounds (flavour, antioxidants, vitamins, minerals, etc...), reducing at each stage of the process the appearance of undesirable compounds (free-radicals, disagreeable flavour notes, toxic compounds, etc...)

Vitagora® is proud of its world-renowned expertise in the following areas:

- Formulating food products which optimize the nutritional benefits for the consumer (e.g.: encapsulation of active compounds to better protect, vectorize and release them in the organism).
- Developing improved transformation processes which respect organoleptical and nutritional properties (e.g.: gentler decontamination techniques, new and innovative ways of cooking, development of technological treatments optimizing active molecules or probiotics targeting health, extraction and valorisation of active compounds)
- Developing active packaging i.e. interaction between food and packaging to improve shelf-life and to guarantee the authenticity and intrinsic qualities of the product
- Conceiving new and innovative domestic cooking appliances which bring improved organoleptical and nutritional benefits to the consumer.



A few projects:

- SAVEURS VAPEURS
- EMAC
- SPICE-CLEAN

PROJECT 1

SAVEUR VAPEURS

To give taste to steam cooking

- Axis 1 Taste throughout life
- Axis 2 Developing and preserving consumer health
- Axis 3 Formulation, processing and materials at the service of taste and nutrition

Aim:

To promote the beneficial health effects of steaming cooking:
To develop a new generation of steam-cooking appliances
To develop new aroma notes associated with steam cooking

Expertise:

Process engineering: optimization of cooking parameters
Engineering of Materials
Transfer of active molecules, films and barriers



PROJECT 2

EMAC

Active packaging for the food industry

- Axis 1 Taste Throughout life
- Axis 3 Formulation, processing and materials at the service of taste and nutrition

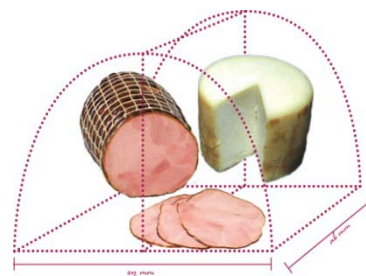
Aim:

To develop active packaging solutions that:

- increase shelf-life
- optimize taste and nutritional qualities

Expertise:

Engineering of Materials
Process engineering
Microbiological engineering
Toxicology
Physico-chemistry
Sensory sciences



PROJECT 3

SPICE-CLEAN

Innovative athermal decontamination treatments which preserves taste and nutritional properties of spices and dried aromatic herbs.

- Axis 3 Formulation, processing and materials at the service of taste and nutrition

Aim:

To evaluate an industrial application of pulsed light and high barometric pressure, innovative athermal alternatives to current treatments, for the decontamination of spices and aromatic herbs: preservation of the taste quality and functional properties of treated products.

Expertise:

Understanding the response mechanisms of biological cells subjected to various types of disturbances
Decontamination processes (High pressure etc.)
Microbiological engineering
Toxicology
Physico-chemistry
Sensory sciences



OTHER SKILLS AND EXPERTISE

Axis 3 Formulation, processes and materials at the service of taste and nutrition:

- Microtechnics, piezoelectric sensors, micro-mechanics coupled with optics: development of sensory sensors, ...
- Metal industry, mechanics, processes, surfaces and interfaces adapted to the optimization / preservation of the intrinsic qualities of foodstuffs

AXIS 4

PRODUCTION OF AGRICULTURAL RAW MATERIALS: IMPACT ON TASTE AND NUTRITION

The regions of Burgundy and the Franche-Comté have numerous assets in the area of agro-ecology. Vitagora[®] has a pool of expertise in the following areas:

- interface between varietal selection and agricultural techniques,
- taste and nutritional qualities of raw materials (food safety, nutrition, varietal research and water economy);
- Development of new and innovative agricultural methods based on understanding and mastering the biological processes of living organisms to optimize the natural production of active compounds such as antioxidants or vitamins.

QUALIVIVANT



FIJUS-R@ISOL

DEFICASSIS



A few projects:

- FIJUS-R@ISOL
- QUALIVIVANT
- DEFICASSIS

PROJECT 1

FIJUS-R@ISOL

Pure Grape Juice: improved taste and nutrition

- Axis 2 Developing and preserving consumer health
- Axis 3 Formulation, processing and materials at the service of taste and nutrition
- Axis 4 Production of agricultural raw materials: impact on taste and nutrition

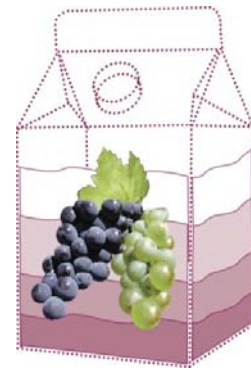
Aim:

To develop a new range of pure grape juices:

- Less sugar
- More antioxidants
- Controlled acidity
- Proven health claims

Expertise:

Agronomy - Varietal Selection
Processes of extraction
Human Nutrition



PROJECT 2

QUALIVIVANT

Development of a new generation of natural plant health agents intended for the fruit and vegetable sectors

- Axis 4 Production of agricultural raw materials: impact on taste and nutrition

Aim:

To develop a new generation of natural fertilizer allowing the reduction of chemicals and ensuring a better return from stronger, more resistant, targeted varieties and improved taste or nutritional properties.

Expertise:

Plant-Microbe-Soil Interaction - Environment
Ecological engineering
Mechanisms of natural plant defences
Sensory Evaluation
Encapsulation

PROJECT 3

DEFICASSIS

Development of innovative products within the Burgundy blackcurrant sector

- Axis 3 Formulation, processing and materials at the service of taste and nutrition
- Axis 4 Production of agricultural raw materials: impact on taste and nutrition

Aim:

To develop new innovative concepts within the Burgundy blackcurrant sector

- Varietals
- Agriculture
- New food products
- New technologies
- Evaluate the taste and nutritional properties of Burgundy varieties

Expertise:

Varietal selection
Agronomy
Biotisation and agricultural practices
Antioxidants
Process engineering
Sensory evaluation
Encapsulation



OTHER SKILLS AND EXPERTISE

Axis 4 Production of agricultural raw materials at the service of taste and nutrition:

- Interactions between agricultural production and the environment: ecological systems, stress and contaminants,
- Environmental Chemistry: development of new processes of industrial and urban water treatment
- Genetic determinism and eco-physiology of the functioning of legumes: agricultural practices, intrinsic qualities
- Biology and management of weeds: agro-ecology of cultivated land, agricultural practices
- Animal breeding systems: breeding practices, product quality
- Agro-equipment and processes



For more information, please contact **Vitagora[®] Taste-Nutrition-Health:**

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