



*Innovative Food Product  
Development Cycle:  
Frame for Stepping Up  
Research Excellence of FINS*



European  
Commission

# Introduction to Sensory Evaluation

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November 23<sup>rd</sup> 2017 | FINS, Novi Sad

Horizon 2020 | European Union funding for Research & Innovation  
Grant Agreement number: 692276 — FOODstars | H2020-TWINN-2015

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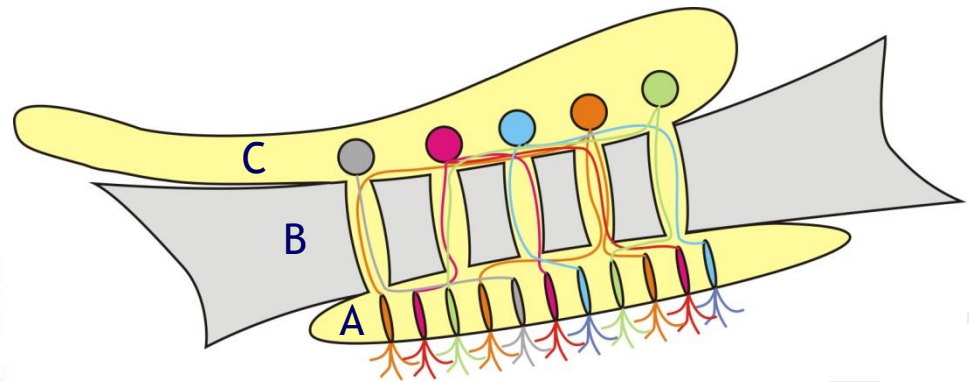
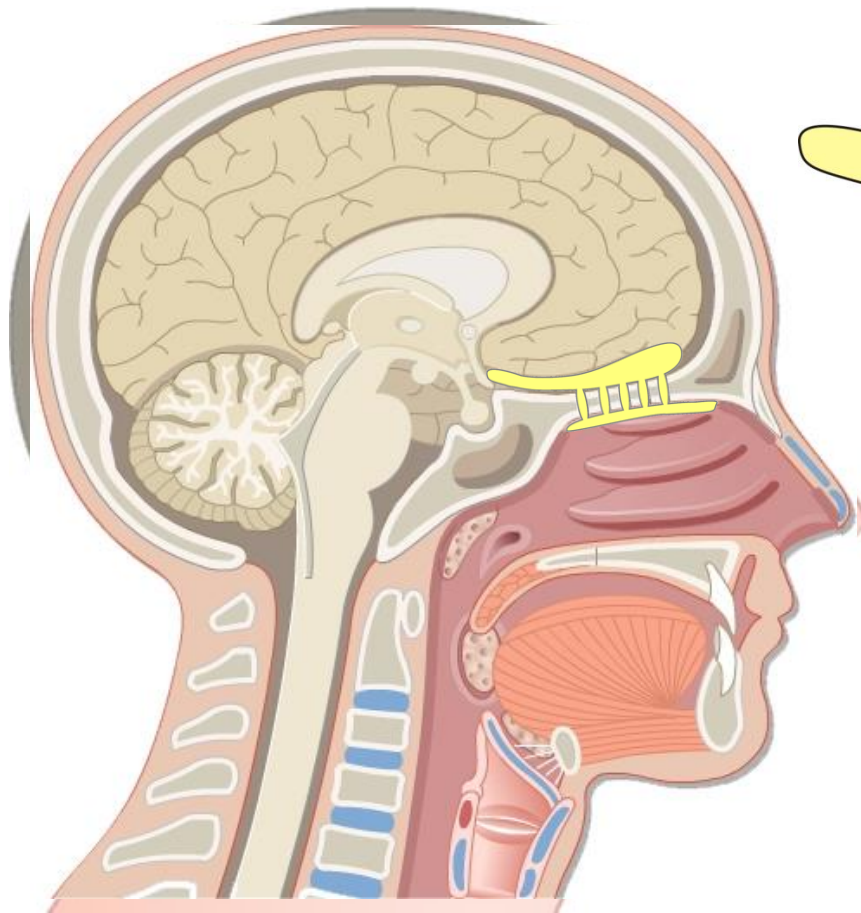
# TERMINOLOGY ASTM E253-16

Sensory evaluation is a scientific discipline used to evoke, measure, analyse, and interpret reactions to stimuli **perceived** through the senses.

Perception:

- **Qualia**: Is my blue your blue?
- Can **Training** alter Perception?

# The Nose and the Sniff



- A Olfactory Epithelium
  - Cilia
  - Mucos
  - Olfactory Sensors
  - Basal Cells
- B Cribriform Plate
- C Olfactory Bulb
  - Glomeruli

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# Phase I: Analytical Sensory Science

- Target: Minimize batch-to-batch variation
- Principle
  - Direct comparison against product standard
  - Different but acceptable
- Methods:
  - Triangle Test or Ranking Test
  - Graded In/Out Test
  - Quality Index
  - Different from Control
- Assessor Qualification:
  - Selected, trained and monitored
  - Product Knowledge

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# Phase I: Analytical Sensory Science

- Target: Sensory Shelf Life Determination
- Principle
  - Different but acceptable
  - Consumer Acceptance
- Method:
  - Survival Analyse
- Initial Considerations
  - Sample heterogeneity
  - Critical descriptors of deterioration
  - Deterioration reactions (Kinetics)
  - Approximation of shelf life value (educated guess)
  - Acceleration (Temperature, Illumination, Oxygen Partial Pressure, ....)
- Assessor Qualification: Heavy Consumer

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# Phase I: Analytical Sensory Science

- Target: Determine whether there is a perceptible sensory difference or similarity between the test samples
- Principle: Determine significance ( $\alpha$ -risk)
- Methods:
  - Triangle Test
  - Ranking Test
  - Paired Comparison
  - Duo-Trio-Test
  - 2-out-of-5-test
  - A-not-A-test
  - Consensus Test
- Assessor Qualification:
  - Selected, trained and monitored

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# Types of Recruitment

- Internal Panel
  - People are on spot, but may lack availability
  - Better confidentially
  - Long time stability
  - candidates are influenced in their judgements by knowledge of and by their familiarization with the organization's products
- External panel
  - no problems with hierarchy
  - selection is much easier, without the risk of offending people if they are unsuitable
  - Expensive

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# Number of Selected Assessors

- The number of persons to be recruited depends on:
  - the financial means and the requirements of your organization;
  - the types and frequency of tests to be conducted;
  - whether or not it is necessary to interpret the results statistically.
- The minimum number is 10 selected assessors
- Recruitment at least two to three times the number of persons actually demanded



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# Criteria for selection

- Health
- Colour vision
  - DIN 10 961
  - Ishihara Tests for Color Deficiency
  - Farnsworth Munsell 100 Hue Test
- Olfaction
  - Sniffin Sticks, Smell Identification & Odour Memory Test, Smell Diskettes
  - Recognition and detection thresholds of odours
  - Description of odours
  - Odour intensity
- Gustation
  - Taste strips
  - Threshold
- Texture

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# Test conditions and requirements

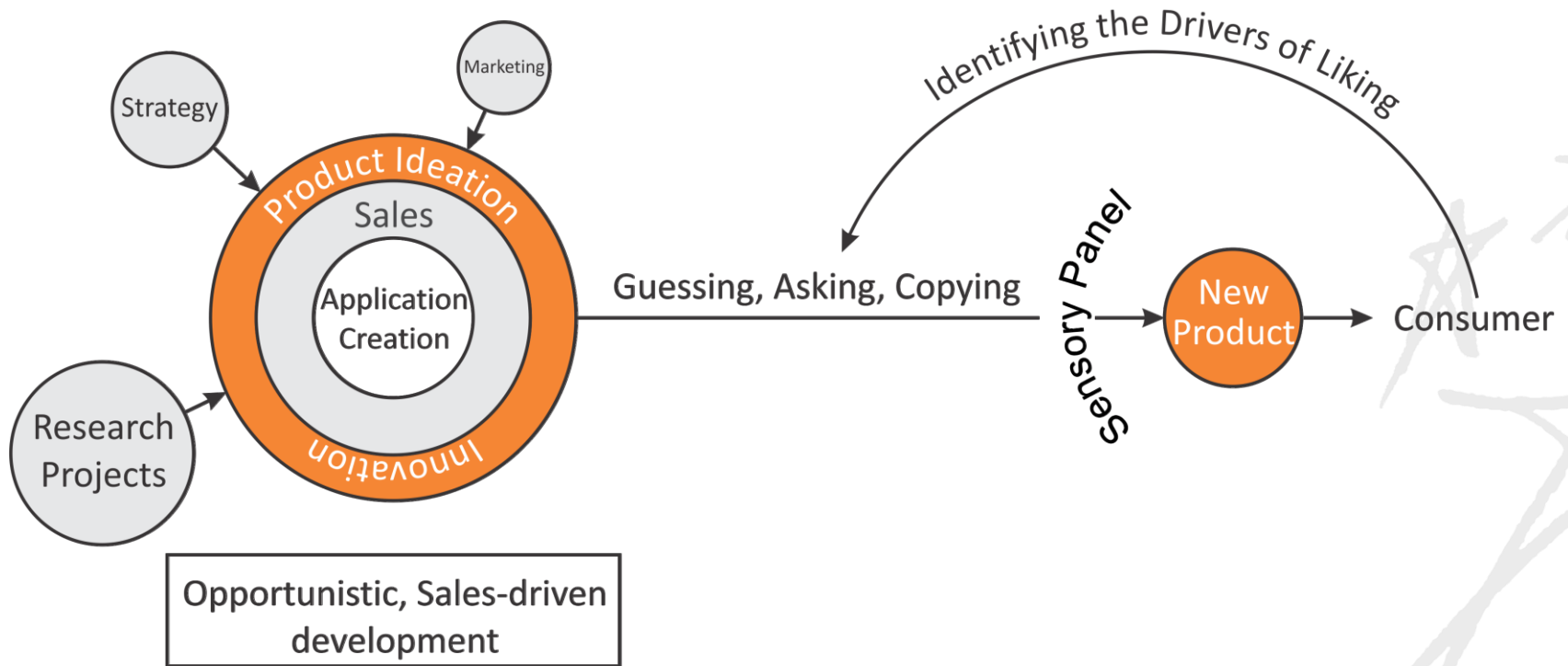
- Clearly define the test objective in writing
- Prevent communication among assessors (use sensory booths)
- Prepare all samples in an identical manner (same apparatus, same vessel, same quantities of product) if possible one day ahead
- Avoid any difference in appearance, mask colour differences by light filters
- Code the samples using a three-digit random number
- Present the samples at consumption temperature with identical temperature
- Sample volume 10-20 ml (hedonic tasting 100 ml)
- Serve carbonated samples in original closed bottle
- Provide neutralizers (water, matzo, toast bred, diluted lemon juice) or not
- During the test sessions, avoid giving information about the product identity or individual performance

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# The Sensory Panel



# Phase II: Successful New Product Development



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# Phase III: Healthy Reformulation

- Target: healthy food products
- Principle
  - Similarity (no difference)
  - Consumer acceptance: Different but acceptable
- Methods:
  - Iso-intensity determination for replacement
  - Quantitative Descriptive Analysis – Aromagram
  - Temporal Dominance of Sensations
  - Boredom testing
- Assessor Qualification:
  - Selected, trained and monitored experts
  - Heavy consumer

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## **DISCLAIMER:**

The FOODstars project receives funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 692276.

This presentation reflects only the opinion of authors and not the opinion of European Commission.



## **NAPOMENA:**

Projekat FOODstars se finansira iz fondova Evropske Unije, iz programa Horizont 2020 za istraživanja i inovacije (broj ugovora 692276). Sadržina ove prezentacije odražava samo mišljenje autora, a ne mišljenje Evropske komisije.

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**NEW STARS  
ARE BORN!**



**Thank you!**