



Campus
AgroParis-Saclay

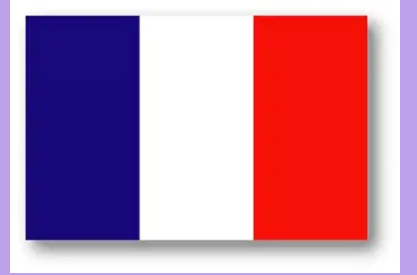


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Project start : March 2026

ABOUT ME

Studies :

- 1) Two-years university degree in biology and dietetic (graduated as a dietician)
- 2) Food science engineering school
- 3) Specialized master in innovation management in food industry

Passions: photography, art, humanities



Team CIDS

Consommateurs et Innovation pour une conception Durable et Systémique

Superviseurs :

David Blumenthal (AgroParisTech)

Marine Masson (AgroParisTech)

Jacob Lahne (Virginia Tech University)

Key words

Sensory science and Consumer Science, Psychology, Virtual Reality, Statistics, Design of Experiments

Study of the importance of culinary activity in a constrained, shared, and minimally equipped space in the context of crewed space exploration missions

Graphical abstract

Astronauts in long-duration space missions

Physiological challenges

- Risk of micronutrient deficiency and muscle deconditioning
- Microgravity can reduce appetite

Psychological challenges

Social isolation, fatigue and food monotony → risk of « menu fatigue » → decrease of food pleasure

Necessity of working on the food pleasure determinants

→ **role of the culinary activity**

Pleasure

Self preparation can boost food enjoyment and intake (Dohle et al., 2014)

Healthiness

Cooking can increase perceived food healthiness and appreciation (Dohle et al., 2016)

Wellbeing

Cooking can have a positive impact on mental health (Mörkl et al., 2024)



...in a constrained environment:

- Limited water and energy
- Necessity of volume/mass optimisation
- Exigent food preservation requirements
- Closed-loop water management

Already some tech advances that adress technical constraints...
...but overlook **the user experience dimension**

How do spatial organization, shared meal preparation, and sensory feedback shape culinary pleasure, and thus nutrition, wellbeing and performance in space and more broadly in constraint environments?

Objectives

- Creation and validation of a psychometric scale measuring **cooking pleasure**
- Quantifying the effect of three major levers on cooking pleasure, eating pleasure and menu adherence (social, spatial, and sensory)
- Developing a predictive model and transferable design recommendations for the CNES
- Supporting the design of kitchen prototypes for CNES through recommendations from collaborative work

Methods used

- Qualitative and quantitative methodologies
- Semi structured interviews
- Video observation
- Statistics analysis
- Virtual reality (HTC Vive Pro)

Funders and partners