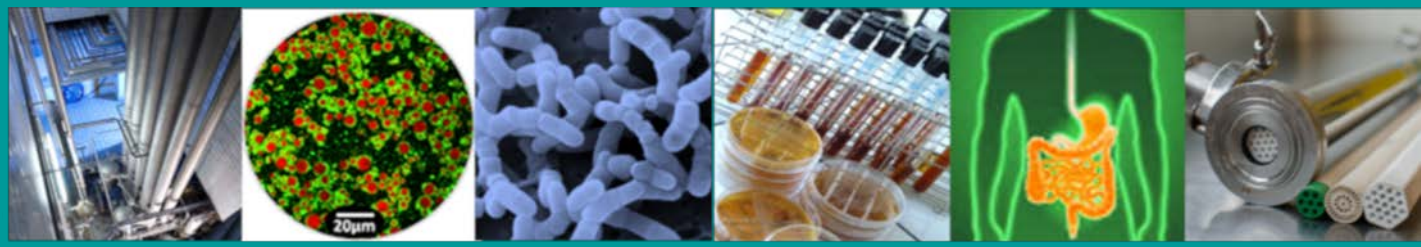
MicroBio team objectives

Eric Guedon

MicroBio team objectives

STLOpen Days
19-21 March 2019



Eric GUEDON - MicroBio

Id card of the MicroBio team

- **35 - 40 persons**

  - 22 permanent staff
    (14 scientists)

  - 16 contract staff/Docs/post-docs/students
    (9 ongoing PhD thesis)

Our partnership

➢ Relevant collaborations

- **National**: INRA (Micalis, MAIAGE, LISBP), INRIA, Univ. Rennes, UBO, …
- **International**: UFMG (Brazil), Gent Univ. (Belgium), Soochow Univ. (China), Kobe Univ. (Japan), Sfax Univ. (Tunisia), Reading Univ. (UK), Teagasc (Ireland), …

➢ Industrial partnership

- Food fermentation / Food quality & safety

- Improve preservation / stability of starters and food-related bacteria
- Improve organoleptic properties of fermented products
- Develop fermented products with health properties
- Identify / characterize starters with anti-fungal activities

- Health (animal and human)

- Develop probiotic approaches

➢ 30 – 40 publications/year

Our financial resources

➢ Public funding (Research expenses; thesis & postdoc scholarships)

➢ Ongoing private funding

Our strengths

➢ Skills

- Genetic, molecular biology, biochemistry, bacterial physiology and metabolism,
- Cellular biology, immunology,
- Comparative and functional genomic, Omics & metaOmics,
- Bio-informatics, molecular modeling, …

➢ Knowledge and expertise

- Food-related bacteria, pathogens, probiotics
- Integrated studies from gene to cheese
- In taking into account the food matrix (components of the environment)

Our objectives / strategies

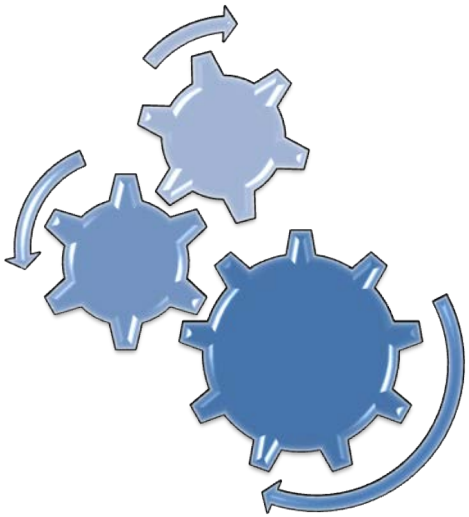
Bacterial communities associated with Food and Health

Characterize interactions between bacteria / environment

Model systems

Molecular level

Basic research



Real systems

Whole ecosystem

Applied research

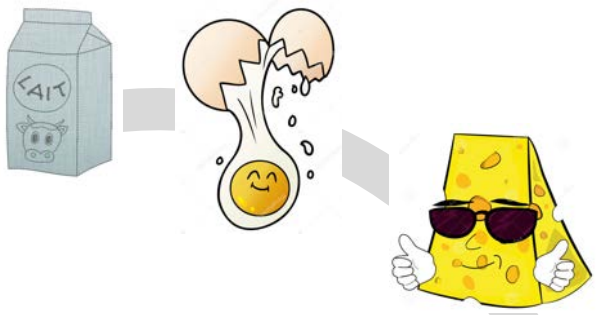
Understand and pilot bacterial communities towards targeted functionalities

Food quality & safety

Develop safe, healthy, sustainable and hedonic fermented foods

Food spoilage

Reduce health risks and food losses and waste



Characterize interactions between bacteria/environment

Animal health

Offer alternatives to antibiotic treatments (probiotics)

Health & wellbeing

Develop functional and designer food against modern lifestyle diseases

General research lines

- **Characterize resident, fermenting, contamination bacterial communities (composition, diversity, biological properties)**
- **Understand the molecular mechanisms underlying the adaptation of bacteria to their environment**
- **Investigate intra- and inter-species interactions and communication mechanisms within bacterial communities**
- **Define rules for assembly of bacterial communities from genetic and phenotypic data to design new communities**

FALENTIN Hélène
GAGNAIRE Valérie

Specific research lines

Food quality & safety

Develop safe, healthy, sustainable and hedonic fermented foods

Food spoilage

- **Understand the pathogenesis and persistence of *S. aureus* mastitis**
- **Study the bovine microbiota (composition, function) with regard to the mammary gland health**
- **Identify early biomarkers of health status**
- **Develop probiotic strategies**

Animal health

Offer alternatives to antibiotic treatments (probiotics)

EVEN Sergine
LUZ Brenda P18

Specific research lines

Food quality & safety

Develop safe, healthy, sustainable and hedonic fermented foods

- **Characterize and exploit microbial diversity (strains / communities properties)**
- **Study interactions (bacteria / matrices / processes / host)**
- **Understand and pilot the functionalities of a bacterial community**
- **Design of bacterial communities for fermenting various resources (milk, plants, mixes, …)**

JAN Gwénaël
HARLE Olivier P15
CANON Fanny P16
GAUCHER Floriane P17

Specific research lines

Food spoilage

Reduce health risks and food losses and waste

- **Fight pathogens in eggs and egg products**
  - **Elucidate environmental adaptation and pathogen resistance mechanisms**
  - **Understand the impact of the egg matrix on the properties of pathogenic strains**
- **Identify markers of contamination and spoilage (e.g. species, metabolites)**

JAN Sophie

Specific research lines

- **Assess and exploit the beneficial properties for human of fermented foods and probiotics**
- **Understand the molecular mechanisms of the beneficial effects of probiotics**
- **Design fermented foods for probiotic delivery**

Health & wellbeing

Develop functional and designer food against modern lifestyle diseases

JAN Gwénaël
LUZ Brenda P18

Oral communications

Food quality & safety

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FALENTIN Hélène
GAGNAIRE Valérie

Food spoilage

JAN Sophie

Animal health

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Health & wellbeing

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THANK YOU