



Reading 25 & 26 June 2015



Focus on INRA ongoing research programs
and methodologies related to **FNN**



INRA Research Units

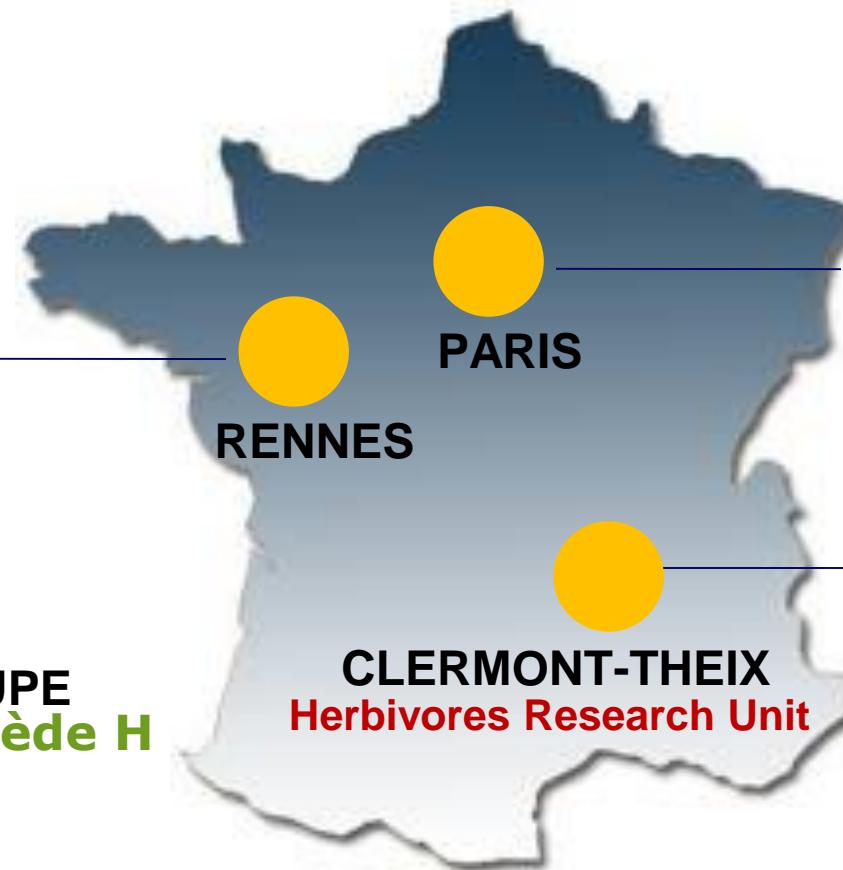
Herbivores Research Unit

**Edouard N
Faverdin P
Hassouna M**

Robin P
Van der Werf H
Wilfart A



GUADELOUPE
Archimède H
Boval M



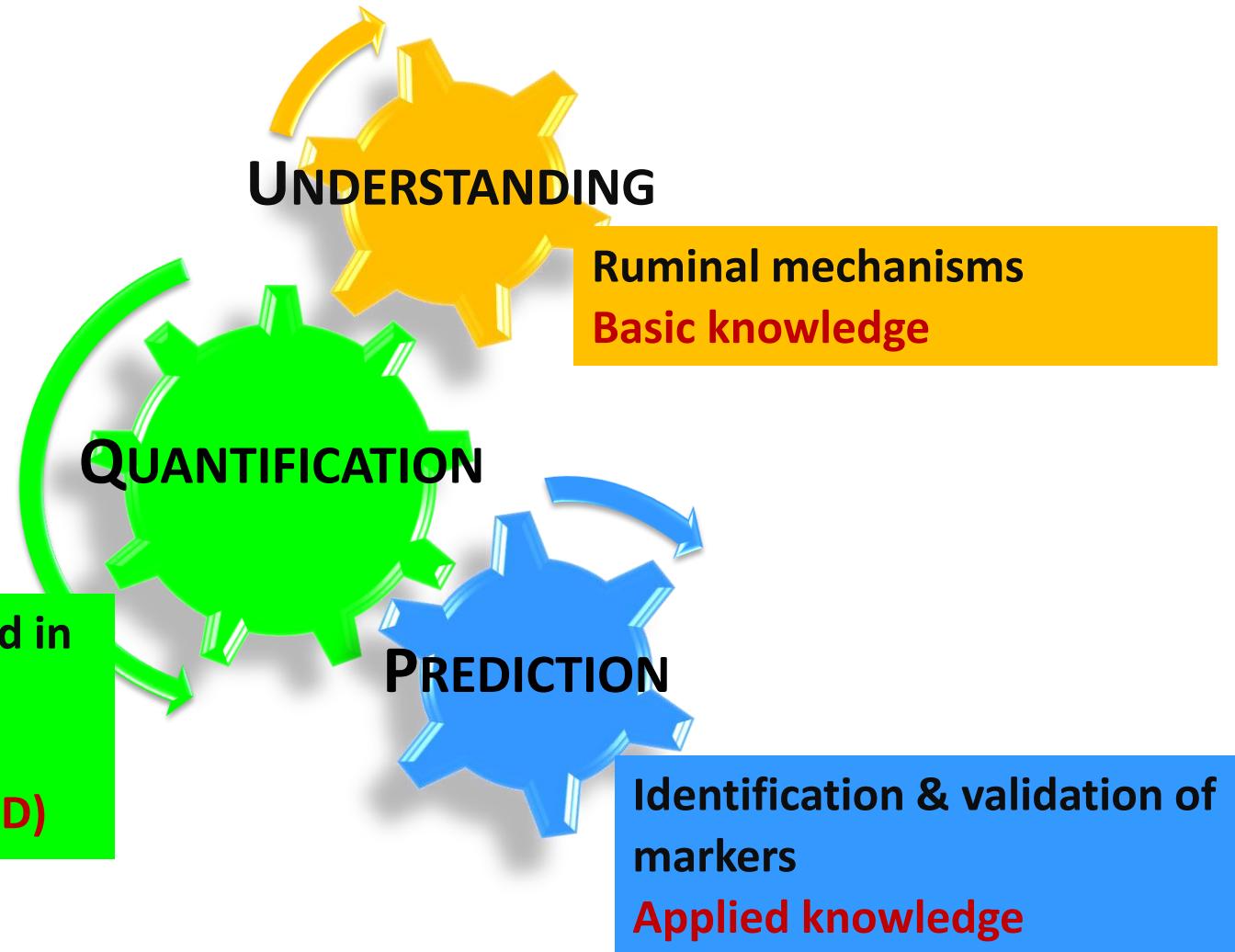
**Giger-Reverdin S
Sauvant D**

**Doreau M
Eugène M
Martin C
Morgavi D
Nozière P
Popova M
Rochette Y**



Our research on CH₄ in relation with dietary strategies

Our different approaches



Ruminal mechanisms

Basic knowledge....

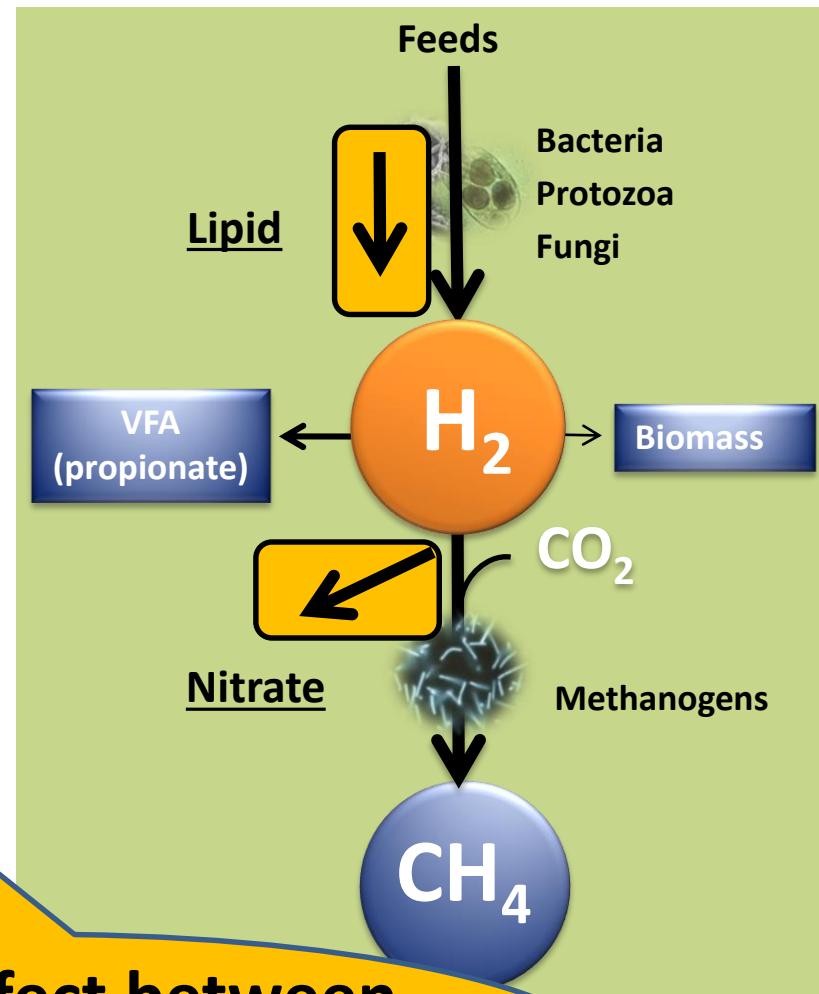


H₂ metabolic pathways

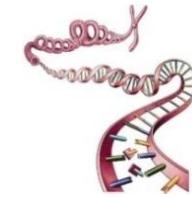
Production

&

Utilization



Rumen Microbiota



Quantity Activity

DNA

RNA

Diversity

Additive effect between Lipid and Nitrate

Guyader et al, 2015 ; 2 Posters



Technical plateform

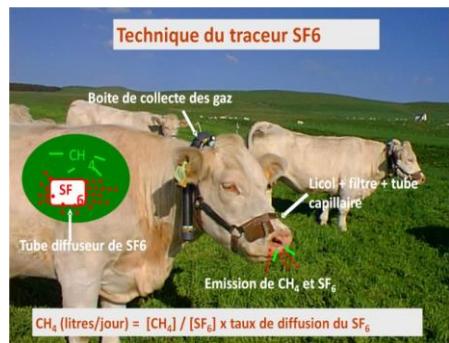
Implementation of Greenfeed and LMD in farms

2000

2011

2014 - 2015

SF₆ tracer technique



8 Open chambers



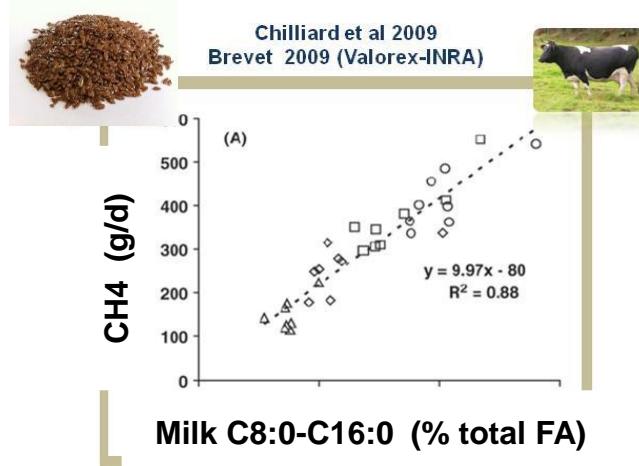
Identification & validation of markers

Applied knowledge



Targeted approach on
milk FA
Dairy cattle

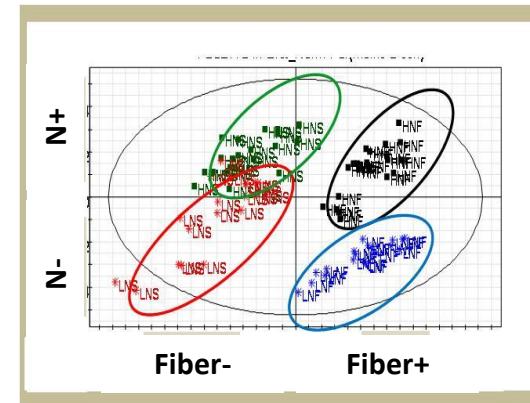
CH₄ & milk FA
Chilliard et al 2009



Gaz chromatography, Mid-Infrared

Non targeted approach on
metabolism
Beef & dairy cattle

CH₄ & metabolites in urine, plasma, milk....
Boudra et al 2013



Metabolomic platforms as
mass spectrometry and NMR

Coll. F Dehareng (Belgium)

Dehareng et al 2012

INRA ongoing programs



Public partners

Facce-JPI Global Network

2014-2018

- GRA Livestock Group FNN
(Feed & Nutrition in relation to GHG emissions)

Facce-JPI Rumen Stability

2014-2018

- GRA Livestock Group RMG
(Rumen Microbial Genomics)

National programs

- Renew French feeding systems (Systali)
- National inventories

Private partners

Consortium CH₄ Inra - 10 partners

2015-2019

- Identification and validation of indicators of enteric methanogenesis for use in methane mitigation strategies

Thanks!

Diego
MORGAVI



Milka
POPOVA



Yvanne
ROCHETTE



Cécile
MARTIN



Michel
DOREAU



Maguy
EUGENE



Reading 25 & 26 June 2015



Update on INRA activities in the **Global Network project**



WP1 : Data collection for the GNW data base

WP3 : In vivo experimentation

WP6 : Analyze of the data base

Specific points to decide together

WP1 : Data collection for the GNW data base

- In progress
 - N = 400 - 500 individual data from dairy cows, beef cattle, sheep
- Delivery in 2 parts if possible : to discuss**
- 30/06/2015
 - 31/08/2015

WP3 : In vivo experimentation

- **Planned** in 2016 (between January-June)
- **Animal** : N= 8 dairy cows in a 4 x 4 latin square design
- **Diet** : 4 diets $\pm \text{CH}_4$ with a CTL and 3 other treatments
 - Missing data in our published data base ?
 - Any suggestions ?
- **Measurement** : CH_4 in chambers, milk FA by GC, Milk MIR spectra (coll F. Dehareng, Belgium)
- **Collaboration** : Other samples for GNW's partners interested?
 - Urine, feces, rumen sample by stomach tubing...
 - Any suggestions ?

WP6 : Analyze of the data base

- INRA Post-doc 18 months to analyze data collected for the GNW project
 - In collaboration with E. Kebreab : how ? on a similar dataset ?
- PUF program / USA - France exchange (A. Hristov - M. Eugène) : under selection
 - Exchange of 3 Masters of 6 months between 2015-2018

Thanks!

Diego
MORGAVI



Milka
POPOVA



Yvanne
ROCHETTE



Cécile
MARTIN



Michel
DOREAU



Maguy
EUGENE