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UNH - Unité de nutrition humaine

Rapport Hcéres

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HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

HCERES report on research unit:

Unité de Nutrition Humaine

UNH

Under the supervision of the following
institutions and research bodies:

Institut National de la Recherche Agronomique - INRA

Université d'Auvergne – UDA

HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

In the name of HCERES,¹

Michel Cosnard, president

In the name of the experts committee,²

Nathalie Delzenne, chairwomen of the
committee

Under the decree No.2014-1365 dated 14 november 2014,

¹ The president of HCERES "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5)

² The evaluation reports "are signed by the chairman of the expert committee". (Article 11, paragraph 2)

Evaluation report

This report is the sole result of evaluation by the expert committee, the composition of which is specified below.

The assessments contained herein are the expression of an independent and collegial reviewing by the committee.

Unit name: Unité de Nutrition Humaine

Unit acronym: UNH

Label requested: UMR

Current number: 1019

**Name of Director
(2015-2016):** Mr Marc FERRARA

**Name of Director
(2017-2021):** Mr André MAZUR

Expert committee members

Chair: Ms Nathalie DELZENNE, Université Catholique de Louvain, Belgium

Experts: Ms Anne BOULOUMIÉ, Université de Toulouse (representative of the CSS INSERM)

Mr Olivier COUX, CNRS, Université de Montpellier

Mr Jean-Charles MARTIN, Université Aix-Marseille (representative of the CSS INRA)

Mr Jean-Paul THISSEN, Université Catholique de Louvain, Belgium

Scientific delegate representing the HCERES:

Mr Jean GIRARD

Representatives of supervising institutions and bodies:

Mr Jean-Baptiste COULON, INRA

Mr Jean DALLONGEVILLE, INRA, Département AlimH

Mr Alain ESCHALIER, Université d'Auvergne

Representative of Doctoral School :

Mr Gilles BRUNSWIG, Doctoral School n° 65 « Sciences de la Vie, Santé, Agronomie, Environnement »

1 • Introduction

History and geographical location of the unit

The history of the unit starts in 2006 with the joint consortium of three research units (Micronutrients and Metabolic Disease Unit, Protein Metabolism and Nutrition Unit, and Protein Energy Metabolisms Unit) into a Human Nutrition DRU. An animal facility has been implemented in 2009, and another team (ECREIN team) has joined the consortium in 2012. The UMR 1019 UNH has been located till now in two distinct places: the INRA Their center (teams 2 and 3) and in Medicine-Pharmacy School Campus (teams 1 and 4). Those campuses are quite distant one from each other (the distance imposes at least 30 min travel by car). Team 1 and 4 will stay on the same site (Medicine-Pharmacy School campus) but they will be relocated in the same and renewed laboratory space in 2016-2017. The bone metabolism research group will leave the INRA center to move to Medicine-Pharmacy School Campus.

Management team

The director of the unit is Mr Marc FERRARA.

HCERES nomenclature

SVE1_LS4 Physiologie, physiopathologie, biologie systémique médicale

Scientific domains

The general aim of the UNH project is to clarify the role of nutrition in maintaining key physiological functions in humans throughout lifespan, especially during aging. The aim of the unit project is to develop an integrative approach taking into account the nutrient interactions within the food and diet, the metabolite or hormonal dialogue across tissues, the regulation of tissue homeostasis, and various pathophysiological conditions leading to disability and morbidity.

Unit workforce

| Unit workforce | Number on 30/06/2015 | Number on 01/01/2017 |
|---|----------------------|----------------------|
| N1: Permanent professors and similar positions | 25 (7,5) | 26 (7,8) |
| N2: Permanent researchers from Institutions and similar positions | 48 (47,6) | 46 (45,6) |
| N3: Other permanent staff (technicians and administrative personnel) | 64 (61,8) | 63 (61) |
| N4: Other professors (Emeritus Professor, on-contract Professor, etc.) | | |
| N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.) | | |
| N6: Other contractual staff (technicians and administrative personnel) | 18 | |
| N7: PhD students | 26 | |
| TOTAL N1 to N7 | 181 (160,9) | |
| Qualified research supervisors (HDR) or similar positions | 42 | |

| Unit record | From 01/01/2010 to 30/06/2015 |
|---|-------------------------------|
| PhD theses defended | 42 |
| Postdoctoral scientists having spent at least 12 months in the unit | 32 |
| Number of Research Supervisor Qualifications (HDR) obtained during the period | 5 |

2 • Overall assessment of the unit

Introduction

The mission of the unit is to develop an original research combining scientific excellence, meeting the socioeconomic challenges targeted by INRA and Université d'Auvergne in the field of food, nutrition and health, focusing, in particular, on the relationship between nutrition and aging. The unit's ambition is to develop a government food policy, and to help developing most suitable products with proven health effects. The research teams will be organized in order to focus their projects on specific endpoints related to human health preservation, rather than just on nutrient intake and its impact on metabolism. The rationale for the future is to take into account food and metabolism complexity (by developing integrative approaches) considering individual phenotypes. Team 1 will concentrate on nutrition related to mobility (nutrients targeting mostly muscle and bone metabolism); team 2 will focus its research on dysregulation of amino acid metabolism (in cachexia, aging, inflammation); team 3 will evaluate the effects of plant-rich diets on vascular health, and team 4 will study the obesity-cancer relationship, with a special emphasis on the role of bioactive nutrients with immunomodulatory properties. Two platforms (a metabolism exploration platform and a platform for animal studies and nutritional exploration in vivo) and several technical facilities (exploration of vascular function, lipids analysis, amino acid analysis) have been established and are efficient.

Global assessment of the unit

The document provided before the visit, as well as the excellent and informative presentations of the director and of the team leaders during the visit, confirm the choice of an optimized and logical (re)organization of the unit that was recently decided. This reorganization receives the support of all the members of the unit. The theme of the unit is related to healthy ageing, which is one of the most important challenges for the near future. The research that will be developed is based on previous internationally recognized knowledge and expertise of the unit members, and puts forward the common and original themes linking muscle, bone, and ageing (including pathologies which incidence increases with age like cancer, overweight, and vascular disorders).

The implemented research themes and platforms are in the line of INRA and Université d'Auvergne directives. The force of the unit is to promote translational research (from animal models to human health (cohorts)).

Strengths and opportunities in the context

Strengths:

- the members of the unit present an excellent and recognized expertise in protein metabolism in relation to nutrition;
- the reorganization is well perceived by all members of the unit;
- the themes developed by the unit correspond to the expected challenges of INRA and of the university to promote Nutrition and Health;
- the research activities are prone to lead to innovative developments in plant constituents and nutrients that interact with key functions controlling physiology;
- in most themes, there are unique combinations of molecular and clinical approaches allowing a real translational research;

- some experimental models are quite unique and allow the implementation of integrative physiology (i.e. minipigs);
- the unit developed an excellent industrial partnership with substantial financial feedback;
- the international partnership is very good (integration in EU networks);
- the unit has the critical manpower and a diversity of scientific and technical approaches.

Opportunities:

- the restructuration may allow strengthening the synergy between teams;
- the initiatives promoted in the new projects may increase the international visibility of the unit, and help to attract PhD students and/or post-doctoral fellows, namely in the context of the European projects (Horizon 2020).

Weaknesses and threats in the context

- the unit is located at two different sites, leading to difficulties in interactions between PhDs and technicians of the teams;
- it would be nice to prioritize key questions addressed in the projects according to the experimental feasibility, and taking into account the manpower and financial support (sometimes not enough detailed in the documents provided).

Recommendations

- the relationship between teams should be improved;
- it would be interesting to combine the different expertises of the teams to allow the publication of some key results in high ranking/large audience reputed journals.