Parasitologie biomédicale

Rapport Hcéres

agence d'évaluation de la recherche
et de l'enseignement supérieur

Section des Unités de recherche

AERES report on the research unit

Unit of Biomedical Parasitology

From the

Pasteur Institute

May 2010

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Le Président
de l'AERES

Jean-François Dhainaut

Section des unités
de recherche

Le Directeur

Pierre Glorieux

May 2010

Research Unit

Name of the research unit : Biomedical Parasitology

Requested label : Pasteur Unit

N° in the case of renewal

Name of the director : M. Pierre DRUILHE

Members of the review committee

Committee chairman

M. Mats. WAHLGREN, Karolinska Institutet, Stockholm, Sweden

Other committee members

M. David ROOS, University of Pennsylvania, Philadelphia, USA

M. Graham BROWN, University of Melbourne, Parkville, Australia

Ms. Deborah SMITH, University of York, UK

Ms. Alistair CRAIG, Liverpool School of Tropical Medicine, UK

M. Mike FERGUSON, University of Dundee, UK

M. Neil GOW, University of Aberdeen, UK

M. José RIBEIRO, NIH, Bethesda, USA

M. Michel NUSSENZWEIG, The Rockefeller University, NY, USA

M. David SIBLEY, Washington University, St. Louis, USA

M. Jérome ESTAQUIER, CoNRS

Observers

AERES scientific advisor

M. Nicolas GLAICHENHAUS

University, School and Research Organization representatives

M. Alain ISRAEL, Pasteur Institute

Report

1 • Introduction

- Date and execution of the visit :

This unit was evaluated as part of the Department of Parasitology and Mycology on October 7, 2009.

- History and geographical localization of the research unit, and brief presentation of its field and scientific activities :

This unit belongs to the Department of Parasitology and Mycology

- Management team :

The head of this unit is Mr. Pierre Druilhe.

- Staff members :

	Past	Future
N1: Number of researchers with teaching duties (Form 2.1 of the application file)	1	1
N2: Number of full time researchers from research organizations (Form 2.3 of the application file)	2	2
N3: Number of other researchers (Form 2.2 and 2.4 of the application file)	4	4
N4: Number engineers, technicians and administrative staff with a tenured position (Form 2.5 of the application file)	5	5
N5: Number engineers, technicians and administrative staff without a tenured position (Form 2.6 of the application file)	0	0
N6: Number of Ph.D. students (Form 2.7 of the application file)	4	4
N7: Number of staff members with a HDR or a similar grade	3	3

2 • Overall appreciation on the research unit

- Strengths and opportunities

Impressive efforts in developing a strategy for antigen identification, finding a target, and driving a process leading to vaccine trials for two antigens (LSA-1, MSP3).

Ongoing field studies on the MSP3 antigen.

Discovery of novel antigens SR11.1 and P27, and characterization of the MSP3-related antigen family.

Understanding of the role of monocyte populations in protection against malaria, including the novel finding that exposure to non-infected mosquitoes in a challenge trial leads to monocyte activation.

Early leadership in the development of SCID mouse models for infecting human erythrocytes with Plasmodium falciparum, allowing studies on correlates of protection, and repopulation with human hepatocytes.

- Weaknesses and threats

Much of the output and conclusions related to blood stage antigen selection depends on a challenging assay for antibody dependent cell-mediated immunity (ADCI), involving the addition of infected RBCs to human monocytes, followed by 96 hr culture in test vs. control serum.

Productivity has been limited in recent years.

Very broad range of topics under investigation: bioinformatics-based antigen discovery, development of SCID models, vaccine trials, etc.

No clear inheritor for this project from within the group.

- Recommendations to the head of the research unit

Workshops should be help to ensure that ADCI techniques are disseminated widely. A standard batch of recombinant human antibody RAM1, standardized cell stocks, and FACS analysis of parasitemia will assist in this process.

It is critical that the two years remaining prior to the team leader's retirement be used to consolidate discoveries made to date, and that the most important work is seen through into publication, so that critical projects can be continued in other groups.

It is not clear what succession planning is underway to identify and recruit new clinician-scientists able to provide the department with insights into clinical malaria.

- Production results

A1: Number of lab members among permanent researchers with or without teaching duties who are active in research (recorded in N1 and N2)	1
A2: Number of lab members among permanent researchers with or without teaching duties who are active in research (recorded in N3, N4 and N5)	2
A3: Ratio of members who are active in research among staff members [A1/(N1+N2)]	3 / 3
A4: Number of HDR granted during the past 4 years	0
A5: Number of PhD granted during the past 4 years	6

3 • Specific comments

- Appreciation on the results

First and/or last author original publications include Infection and Immunity (2005, 2009a, 2009b, 2009c) ; Mol. Biochem. Parasitol., (2005) ; Plos Med. (2005, 2007) ; J. Inf. Dis., (2006, 2009) ; Vaccine (2006) ; J. Immunol. (2007) ; Antimicrob. Agents Chemother. (2007) ; Plos One (2008, 2009) ; Eur.J.Immunol (2008) ; J. Postgrad. Med. (2006) ; Mem. Inst. Oswaldo Cruz (2007) ; Malaria Journal (2009a, 2009b) ; PLoS Pathogens (2009).

Team members have also published reviews in Biotech-Medecine (2005), Trends in Parasitology (2005, 2006) and Current Opinion in Microbiology (2007).

Note de l'unité	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A	A	A	A	B

INSTITUT PASTEUR

Paris, le 28 Avril 2010

Unité de Parasitologie Biomédicale

Comments AERES

A. Main comments:

This report fails to stress our major achievement: bring to the clinic, fund and above all manage 5 clinical trials including 2 efficacy Phase IIb trials, using vaccines discovered in our Unit, which correspond to ca. 60% of our activity.(ie "productivity has been limited" !, these are not mice experiments!)*
It also fails to stress the strong rationale which led to both the discovery as well as the rationale followed over the development steps of our products, which stands in contrast with competing candidates.
It fails to underscore the value of a clinical approach where all discoveries were derived from protective human immune responses and thereby escape the bias of the widely used rodent models.

In general, the report provides a very partial and dull apraisal of the unit achievements.

The scientific recommendations are also remarkably short, and in fact restricted to a very minor point, ie teaching a biological assay, whereas it was announced this was already on schedule…

B. Additional comments:

It also fails to catch that the diversity of approaches allows to better depict human-parasite immune interactions and is not a dispersion of resources.

The experts may not have fully understood the novelty of our focus on innate immunity, which yielded major and unprecedented findings about human defences.

The problem of inheritors is correct, though it is evident that the experts have been misled about the perspectives for the coming years as the French law allows retirement in 7 years from now.

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* Vaccine development, which is obviously required from a Public Health perspective, is a risky business from a scientific evaluation perspective, as the chances to fail and publish minor papers are greater than the opposite (in case only the impact factor of publications are taken into consideration). This risk should have been acknowledged (and should be rewarded, otherwise only mice experiments will be performed).

In addition, fundamental research has been just as active as in the past but the strain of performing 5 clinical trials (and funding 4 new ones, about to start) has delayed the writing of some of those results.

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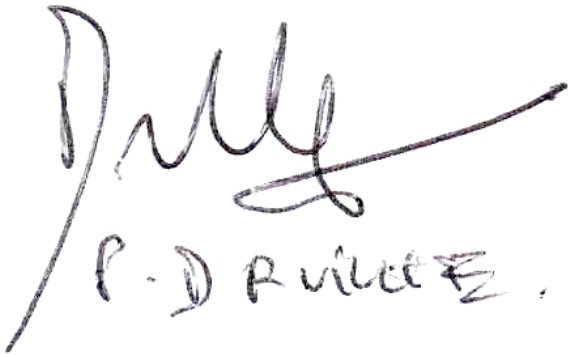

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