

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
Regional Office for Latin America and the Caribbean

EVALUATION OF THE LATIN AMERICAN PROGRAM
ON HUMAN REPRODUCTION - PLAMIRH

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Evaluation of the Latin American Program on Human
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1. INTRODUCTION AND GENERAL BACKGROUND

1.1. Objectives of the evaluation of PLAMIRH

The basic purpose underlying the review of the Latin American Research Program on Human Reproduction (PLAMIRH), deals with examining the financing mechanisms which made it possible to carry out the Program. Therefore, hereby it is attempted to undertake an analysis of the functioning and impact of the Program in the Latin American region. However, it should be born in mind the need for distinguishing the financing mechanism itself from the issue of human reproduction, because of a series of factors influencing the long-standing effects of the initial impact of PLAMIRH. Some of these factors are in themselves independent from the Program's financing mechanism. The evaluation and follow-up of PLAMIRH was carried out bearing these considerations in mind.

1.2. Methodology of the evaluation

In order to carry out the evaluation of PLAMIRH's financing mechanism, its impact and its relationship with the issue of human reproduction, as well as its development within the Latin American region, the following steps were taken:

- (a) review of the final report of PLAMIRH and the progress reports produced;
- (b) review of the evaluation carried out in 1979 by Mariano Requena, Ricardo Asch and Henrique Tono;
- (c) interviews to various PLAMIRH's staff members, among them, staff from the Executive Board, the Scientific Committee, the Executive Secretariat and researchers from Peru and Bolivia.

1.3. Content of the evaluation

The scheme from Figure 1 was adopted in order to make it possible to undertake the evaluation of the financing mechanism itself and its relationship with the area of human reproduction. Various aspects of the mentioned scheme should be specified:

- (a) Initially, it is determined in the scheme both the type of situations or objectives the Small Grants Program best fits and the conditions required for the functioning of its financing mechanism (see items A and B).
- (b) An analysis is made of the impacts and contributions made by the Program during its period of operation for the development of the research area on human reproduction 1/.

Firstly, it will be analyzed the impact of PLAMIRH on the training of human resources. It is attempted to look into such aspects as: what has been the increase in the number of researchers working on the field of human reproduction; an assessment of the training process of junior researchers; finding out whether the Program stimulated the interest of experienced researchers working on areas different from the Program's area; what has been the duration of the training period (materials supply) in the Program-supported research, and, an assessment of the educational role of PLAMIRH.

1/ In developing this aspect, references were taken from: PLAMIRH. Informe Final de Actividades, and, Mariano Requena, Ricardo Asch & Henrique Tono. Evaluación del Programa Latinoamericano de Investigación en Reproducción Humana - PLAMIRH. Bogotá, July 1979 (mimeo).

FIGURE 1

SCHEME OF THE EVALUATION OF PLAMIRH

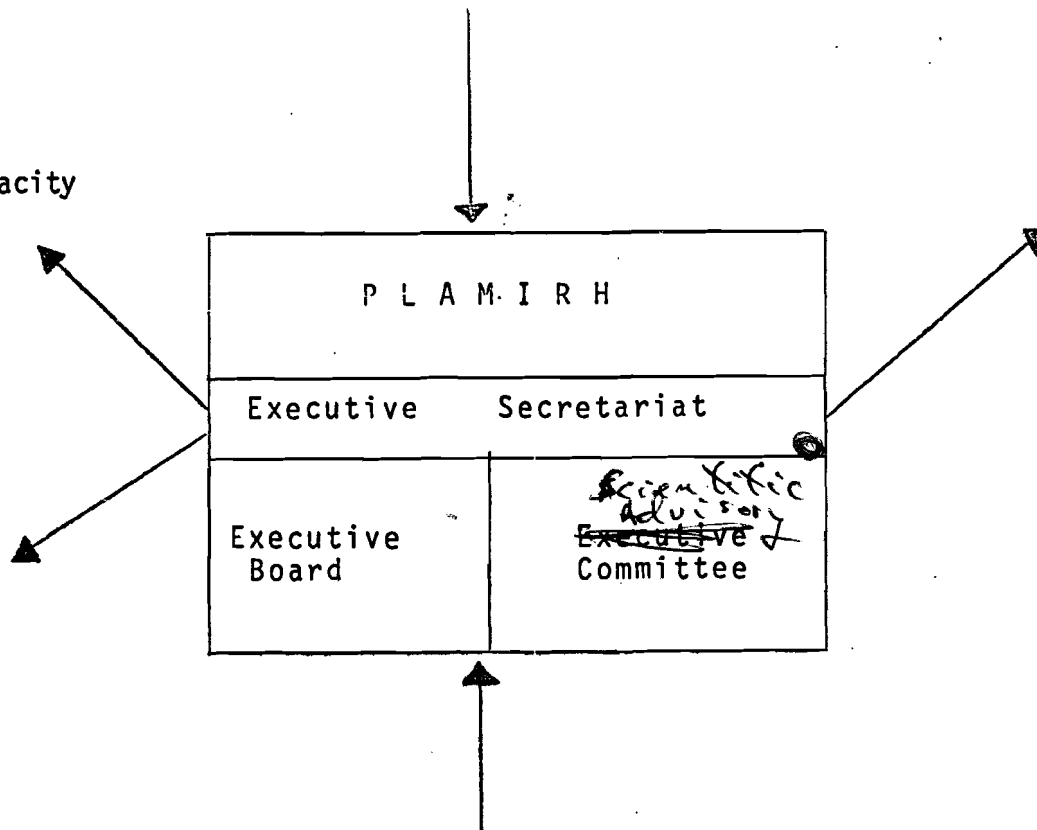
A. TYPE OF SITUATIONS OR OBJECTIVES BEST FITTING SMALL GRANTS' SUPPORT

II. OTHER IMPACTS IN THE REGION

1. The Program may become a mechanism linking potential users
2. Development of research management capacity within the countries in the region

III. LONG-STANDING EFFECTS OF THE IMPACT OF PLAMIRH

1. Human resources
2. Institutional development
3. What contributions made by PLAMIRH still prevail?
 - a) Scientific results
 - b) Quality of the work presently being undertaken on the area
 - c) Policy implications



B. CONDITIONS FOR THE FUNCTIONING OF THE SMALL GRANTS PROGRAM FINANCING MECHANISM

I. CONTRIBUTIONS TO THE DEVELOPMENT OF A RESEARCH AREA 1974-1979

1. Training of human resources
2. Contributions to knowledge (results of the research)
3. Institutional impact
4. Support to the development of a regional scientific community on human reproduction

N.B. DIFFERENTIAL IMPACT ACCORDING TO THE TYPE OF COUNTRY:

- Size
- Degree of development of the research area
- Amount of human and financial resources available

Secondly, an assessment will be undertaken on the results of the research. It is necessary to find out if new research lines in the area of human reproduction were opened; if the number of publications and authors increased; what is the quality of the research results; if the research is oriented towards basic or applied research; and, finally, to consider if the orientation of the PLAMIRH-financed research area was actually focused on priority matters.

Thirdly, comments are made vis-à-vis the development of a regional scientific community. This aspect has to do with the acknowledgement and legitimacy of a research area.

From the methodological point of view, one must bear in mind that this impact and its long-standing effects vary according to the degree of development of the countries involved in the Program.

- (c) Another aspect in the evaluation of PLAMIRH and its financing mechanism is linked to the analysis of other impacts of PLAMIRH in the region.

In the first place, it must be determined what is the link between the Program and its potential users in terms of its policy implications and the building of awareness over the issue of human reproduction. In the second place, and no less important, it must be examined the development of the capacity of Latin American groups to administer research programs (Research Management).

- (d) Finally, the scheme from Figure 1 contains an analysis of the long-standing effects of the impact of the Program on the area of human reproduction. In this document it is attempted to analyze

whether the research groups continue to exist, what is the degree of development they have attained, and what are the researchers who were involved in the Program committed to at present; and, it is also attempted to determine which contributions from PLAMIRH still prevail in terms of the scientific quality of the results obtained and their policy implications. At this point, it is most important to identify if the causes for the long-standing, or non-long-standing effects of the initial impact of the Program are related to, and to what extent, the functioning of the financing mechanism of the Small Grants Program.

2. OBJECTIVES OF THE SMALL GRANTS PROGRAM AND CONDITIONS FOR ITS FUNCTIONING

2.1. Type of situation or objectives which best fit small grants' support

The financing mechanism of the Small Grants Program is inadequate for solving identified, concrete or specific problems. In the evaluation of PLAMIRH it is stated that, "The mechanism of PLAMIRH would not necessarily be the best one if the objectives of the proposal or project were the ones of obtaining research results as a response to a concrete and well defined problem, which could rather require to concentrate the resources on a small and experienced research team" 2/.

According to the initial objectives of PLAMIRH, by means of this mechanism it was attempted to:

- (a) develop a local research capacity;
- (b) promote and stimulate new ideas by means of applied research projects;

2/ Mariano Requena, Ricardo Asch and Henrique Tono. Op.cit., page 27.

- (c) sponsor the incorporation of a greater number of researchers, primarily junior ones, into the field of biology of reproduction;
- (d) favour and stimulate the development of research groups in those countries lacking these research basis or just having a small background in this respect.

According to the results obtained through the present evaluation, it can be said that points (a), (b) and (c) best fit the objectives pursued through the Small Grants Program. Point (d) presents its limitations, which will be analyzed later on in this paper.

Such a determination of the purposes of the Small Grants Program makes it clear what are the objectives to be pursued through large grants. In other words, this document contains the objectives which justify either to concentrate research resources on a particular problem (grants of a considerable amount), or their atomization through small grants' support. Each of the aspects so far mentioned will be brought back into question in the subsequent sections, and it will be determined what have been both their limitations and coverage.

2.2. Conditions for the functioning of small grants or small research grants involving this financing mechanism

Among the conditions required for the functioning of the Small Grants Program, the initial evaluation of PLAMIRH states the following one: "It is necessary to count on the previous existence of research groups and a basic institutional infrastructure to grant the adequate orientation and administration of the Program" 2/.

2/ Mariano Requena, Ricardo Asch and Henrique Tono. Op.cit., page 27.

In confronting these two aspects, it is made clear in the results of the present document that the administrative and financing mechanism of small grants operates where a certain degree of institutional development exists. It is also clear that it is not possible to undertake institutional development activities (strictly speaking), through small research grants. In this respect, it is considered that, to make small grants effective and of a greater impact, it is necessary that they be implemented within an environment having a certain degree of development in terms of an economic, material and human resources infrastructure. The aspect related to the institutional framework necessary for implementing the small grants' financing mechanism is linked to the following aspects:

- (a) Geographical distribution. Among the already mentioned objectives of the Program it is the one aimed at providing a more consistent support to less developed countries to form new research groups. In the document on the objectives, organization and functioning of PLAMIRH, published in 1977, reference is made to the following characterization of the countries in the region: "In various countries (Bolivia, Paraguay, Ecuador and Central American and Caribbean countries), research on biology of reproduction has stand at an early stage of development in comparison to other more developed countries (Argentina, Chile, Uruguay, Brazil, Mexico). In some other countries (Peru, Colombia, Venezuela), high-level research is undertaken by restricted groups. PLAMIRH's practical results show a great concentration of allocated resources on countries considered to be more developed (Argentina and Chile took a 57.2% of the financial resources contributed by PLAMIRH for the funding of research projects in countries characterized by an early stage

of development in the area of research on human reproduction 3/.

Therefore, in looking at the results from PLAMIRH, it is found that there was a great concentration of financial resources allocated and requests presented (because of the project-generating capacity) on countries which, from the point of view of research, present a greater degree of development. Chart 1 presents the distribution of the number of projects' submissions to PLAMIRH and the amount of resources allocated and extensions approved.

PLAMIRH's Executive Board had already detected this concentration of resources when analyzing the requests coming from the countries in the region. Among the recommendations adopted by PLAMIRH's top governing body it was the one of providing individual sponsorship to junior researchers in the region with a view to helping them develop their own research proposals. In spite of having detected the problem of the concentration of resources on the more developed countries and of having proposed measures to give a solution to the situation presented, the final results did not modify the geographical concentration of allocated resources. The reason why PLAMIRH did concentrate its financial resources on the more developed countries lays in the fact that prior to the onset of the Program, that was the development status of research on human reproduction in the region. Such a status did not change after

3/ Later on in this document these aspects will be analyzed in depth. It will be specifically studied (see Figure 1) the item related to the impact of the Program and its long-standing effects.

CHART 1

DISTRIBUTION BY COUNTRIES - REQUESTS FOR SUPPORT AND GRANTS
AND EXTENSIONS APPROVED - December 1974-July 1979

COUNTRIES	REQUESTS	PROJECTS APPROVED		
		GRANTS	EXTENSIONS	TOTAL
Argentina	102	56	22	78
Bolivia	2	-	-	-
Brazil	25	7	1	8
Colombia	14	8	2	10
Chile	48	26	12	38
Ecuador	3	-	-	-
Mexico	19	14	4	18
Paraguay	2	2	-	2
Peru	19	17	2	19
Dom. Republic	1	1	-	1
Uruguay	17	10	3	13
Venezuela	2	1	-	1
TOTAL	254	142	46	188

SOURCE: PLAMIRH. Final Activity Report.

the onset of PLAMIRH 4/.

The experience from PLAMIRH indicates that, where there was no research tradition in the area of biology of reproduction, there was no project's generation either (mainly in the cases of Central America, Bolivia and Ecuador).

A general conclusion on the above indicates that, in order to attain small grants' success, it is indispensable to count on already established research groups and that a research tradition exists. This type of financing mechanism must operate within an environment having a research background. It is not possible to expect that through small grants' sponsorship or just through a simple project's support, it will be feasible to develop an adequate infrastructure in terms of material, economic and human resources.

- (b) Incorporation of junior researchers. PLAMIRH's experience has dealt with the incorporation of new researchers into the already established groups. In general terms, and with very few exceptions, new research groups did not come up 5/.

Through the mechanism of the small grants, the program established (in this case PLAMIRH), or the host institution other than the financing institution in which the program is set, are provided with the administrative and technical capacity for its implementation (where projects are generated).

5/ The exceptions correspond to the Yucatán group (Mexico); in this case a proficient and well-trained researcher from Mexico City moved to the Province of Yucatán and created his own research group, as it was the case with the Valdivia group in Chile.

Two aspects to be taken into consideration arise from the above comments: how to strengthen the quality of the projects selected and how to grant the quality of the results to be attained.

The first aspect is related to the projects' formulation and the second one is related to the projects' evaluation and follow-up (projects' monitoring). These two aspects must be taken as basic conditions to make small grants operative and of a positive impact in the region.

Regarding projects' formulation, PLAMIRH was particularly successful in this respect because of the role played by the Executive Secretariat and the rightly and time-consuming job performed by the Executive Board and the Scientific Committee. By means of these administrative mechanisms it was possible to contribute to the projects' formulation phase through a good evaluation of the same. In this way, junior researchers will benefit themselves from the improvement of their projects' formulation.

In regard to the second aspect, projects' monitoring, from the theoretical point of view such a monitoring is considered to be a must if the program is to succeed. In the particular case of PLAMIRH, monitoring was not a priority task in view of the difficulty for visiting the large number of financed projects which were underway. Since this aspect is deemed important, a great part of the researchers interviewed suggested to foresee from the very beginning the conduction of follow-up and evaluation activities for this kind of programs through external contracts of a provisional nature, to be carried out by local human resources of a well-known scientific proficiency. In the case of PLAMIRH, the environment in which projects were developed -junior researchers were not isolated, but they were in large part connected with senior researchers- permitted that projects would be successfully carried out despite the fact that no systematic monitoring was done. The academic demands put forth to the proponents in the projects' formulation phase towards their submission

to the Executive Secretariat and the Scientific Committee also contributed to these positive results.

As shown by the interviews, an aspect which was constantly associated with the success of PLAMIRH is the fact that the program was conducted and executed by Latin American scientists. This fact is more related to the Program's area of biology of human reproduction than to the financing mechanism itself.

Another element to be taken into consideration as a necessary condition for the success of small grants' support is that, if a program is to be financed, it ought to be placed within an institutional framework having a good administrative capacity, that is, the project's institutional and administrative infrastructure must be suitable. This was the case of the Corporación Centro Regional de Población (CCRP-Colombia), whose institutional framework served as the basis for the functioning of PLAMIRH.

Finally, the impact of small research grants' support is associated with the administrative efficiency in considering and defining the requests submitted by the regional scientific community.

3. CONTRIBUTIONS TO THE DEVELOPMENT OF RESEARCH IN THE AREA OF HUMAN REPRODUCTION

For methodological purposes, the impact of PLAMIRH during its period of operation (1974-1979) has been set apart from its long-standing effects (1985). This is so, because this is the only way to differentiate the mechanism as such (small grants) from the program itself. As it will be shown later on in this document, most of the current limitations the

area of human reproduction and its research groups are faced with nowadays are not strictly related to the financing mechanism of small grants itself, but to different factors.

The contributions from the Program can be seen when analyzing the training of human resources, the contributions to knowledge, the institutional development and the development of a scientific community. Are taken into account in the analysis of these aspects both PLAMIRH's final activity report and the evaluation carried out in 1979, referred to in the present document. In addition, the analysis is complemented with the results from the interviews carried out.

3.1. Training of human resources

Through PLAMIRH, important research groups from the Latin American scientific community had the opportunity to devote themselves to research activities or to continue with them. PLAMIRH approved grants and extensions for 188 projects, given to 402 researchers (136 principal researchers and 266 associate researchers). In PLAMIRH's final report, it is estimated that this number may grow even higher if it is taken into account that, "The number of scientists who were granted support turned out to be higher than it was originally expected, since many of them joined ongoing research, and, as it will be shown in the training component section, a large number of junior scientists were trained".

One of PLAMIRH's greatest contributions dealt with the fulfilment of training provided to junior researchers through the project's execution phase. In Chart 2 it can be seen that a 76% of the proposals presented came from researchers younger than 40 years of age. From the grants

approved, a 79% was given to scientists younger than 40 years of age 6/.

CHART 2

AGE OF PRINCIPAL RESEARCHERS - DECEMBER 1979 - JULY 1979

<u>AGE GROUP</u>	<u>No. OF REQUESTS</u>	<u>No. OF GRANTS</u>
21 - 25	11	5
26 - 30	35	16
31 - 35	82	52
36 - 40	66	39
41 - 45	39	23
46 - 50	10	4
51 - 55	6	4
56 - 60	4	-
61 - 65	-	-
66 - 70	-	-

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SOURCE: PLAMIRH. Final Activity Report.

An outstanding and fundamental fact arising from the interviews carried out dealt with the accessibility to research funds from people not having an important background or research experience. Had PLAMIRH

6/ The criteria defined by PLAMIRH for detecting the appearance of a new researcher is when his/her first publication is issued and when he/she is granted support as an independent researcher.

not existed, these potential researchers would have had no access to larger grants whatsoever.

As for the criterion stating that the first grant support makes an independent researcher, the evaluation carried out in 1979 showed that 4 out of 5 researchers surveyed could not afford self-support to their research endeavours. On the other hand, PLAMIRH managed to attract the interest of some researchers who were not involved in the area of human reproduction and to have them engage into it. This is the case, just to mention an example, of the genetics group of the University of San Marcos in Lima, Peru, directed by Jaime Descailleaux. This group joined a clinics group in order to carry out research on human genetics. A similiar thing happened with the Centro Biológico Luiz de Fora (Biological Reproduction Center Luiz de Fora - Brazil), which was basically devoted to the private exercise of clinical biology. Through PLAMIRH they were stimulated to engage in basic research activities. In Paraguay, Ricardo Moreno, a physician with a specialization in genetics, devoted to the area of endocrinology at the Instituto de Ciencias Basicas of the University of Asunción, was stimulated by PLAMIRH to get himself involved in research on some medicinal plants 7/.

These are just some examples of how some groups and researchers who had been devoted to other activities joined the area of human reproduction through the action of PLAMIRH.

Another important aspect of the issue of human resources is the one of the training and educational component which was developed by means of PLAMIRH. From the formal point of view, PLAMIRH did not provide

7/ His research was related to the pharmaceutic effects produced by the application in rats of the medicinal plants used in the control of reproduction in Paraguay.

for the allocation of financial assistance to the training of human resources (hence, the development of groups turned out to be difficult within less developed countries not having a research tradition in the area of biology of reproduction). However, some training cases took place, which were regarded as by-products of the respective projects 8/.

The impact of PLAMIRH on the training and educational component can be appreciated by the improvement in the quality and quantity of the researchers' training accomplished through their own research projects. This also had a positive influence on junior researchers undertaking pregraduate and postgraduate studies. Likely, as it was stated in the final report of PLAMIRH, "The interest from many junior researchers was attracted, and they were invited to broaden their knowledge on biology of reproduction. According to this mechanism, 83 junior researchers or advanced students were trained. Many of them used their own research experiences and results in their theses for graduate, M.A. or Ph.D degrees, depending on each particular case. Some of these young researchers have later on submitted their requests for support".

Likely, the researchers interviewed and the existing documents on PLAMIRH have acknowledged that the new laboratory methods devised and the knowledge gained, as well as the bibliography obtained, have contributed in the upgrading of the training standards at the pregraduate and postgraduate levels in the region.

8/ Edgardo Alvarez, a Chilean researcher from the University of Valdivia spent a 4-month period in Mendoza, Argentina, under the direction of Alfredo Donoso for the study on gonad radioimmunoessay with emphasis on "prolactina". Elydia Mujica, a researcher from the University of San Marcos, Peru, made a 6-month study trip to the University of El Valle in Colombia in order to learn about radioimmunoessay on gonadotrophines and other complex laboratory techniques applicable to studies on reproduction.

3.2. Contribution to knowledge (results of the research)

In order to analyze the contributions to knowledge made by PLAMIRH, it is necessary to first take into account which was the thematic orientation of the Program. It was focused on the following areas: neuroendocrinology; function of the hypophysis; gonads; ovumgenesis; follicular maturation; inhibition and stimulation of ovulation; testicle, gametogenesis and endocrine function; male and female genital tract; fecundation; implantation and nidation; lactation; epidemiology; clinical essays and research on apes and other typical animals in the region. It should be noted that the concentration which took place within the areas from the field of biology of reproduction defined by PLAMIRH was determined by the origin of the projects itself (its generation source) instead of a plan set beforehand. This is logical if one considers that the different research groups (wherein projects were generated) had their own specialization.

With respect to the subject of new research lines, it can be said that they did come up, even if with the particular limitations of the financing mechanism (small grants), inasmuch as researchers having small grants' support must focus themselves on areas in which research is already underway. Now, a fundamental aspect is that the small grants' mechanism is not useful for beginning with new research lines if the minimum infrastructural conditions required are not present (an adequate environment). If this research environment is not present (e.g., already formed research groups), it is impossible, as confirmed by PLAMIRH's results, to explore new or non-traditional research lines.

Among the new ideas developed through PLAMIRH's grants the following ones can be highlighted:

- (a) The research on "El papel de la hormona antidiurética en el control hormonal de la movilidad del útero menstrual humano", carried out by the obstetrics and gynecology group of the University of El Valle, Colombia. This research opened a new work area at the reproduction laboratory of the University.
- (b) The research carried out by the Department of Chemistry of the University of El Valle, Colombia, on the abortive properties of parsley (Petroselinum Sativum), and its possible effects in congenital malformation.
- (c) Another idea, eventhough not so successful on account of a series of variables identified opposing some of the conclusions reached, deals with the determination of phosphates in saliva as a method for indicating ovulation, developed by the group on biology of reproduction of the University of Yucatán, Mexico. In spite of the difficulties encountered, this group keeps on working on the subject.
- (d) A quite important development was carried out by José Hib, a member of the Human Reproduction Research Center of the Faculty of Medicine at the University of Buenos Aires, Argentina. The results of his work are contained in the publication entitled: "Pharmacological regulation of epidemic contractility. Effects on spermatozoid maturation". This is the case of a junior researcher who was acknowledged internationally through PLAMIRH's support. He performed a truly pioneer labour, so much so it gave him enough prestige to be invited to present the results of his work at various levels.

It should be pointed out that José Hib belongs to the group developed by Roberto Mancini (passed away), who was an outstanding

member of the Latin American Scientific Community. He was also a member of PLAMIRH's Executive Board 9/.

- (e) Another research endeavour, although not initiated through PLAMIRH but continued through the Program's support, was the one by Daniel Cardinalini entitled: "La glándula pineal. Un modelo para el estudio de la interacción de esteroides sexuales-neurotransmisores en el sistema neuroendocrino". This research can be considered to be an important contribution to the studies existing in the world on the physiology of the pineal gland.

Cardinalini was a researcher from the Latin American Institute of Physiology of Reproduction - ALIRH) in Buenos Aires, Argentina. He belonged to the group leaded by Jorge Rosner, who was also a member of PLAMIRH's Executive Board.

- (f) The group of the Cayetano Heredia University in Peru has contributed the study on puberty in altitude. This research was developed by Juan Coyotupa 10/.

9/ This is a typical case illustrating the shifting and introduction of new research lines. Traditionally, this research group was devoted to the area of histology, biochemistry and physiology of the testicle. José Hib's research was oriented towards the study of pharmacology of the epididymis.

10/ The Cayetano Heredia group is a strong research team in the field of research on altitude. Traditionally, its activities were focused on such aspects as the respiratory system, the cardiovascular system and later on on endocrinological research (from the point of view of reproduction).

These are some of the important examples of the new research lines that were developed through PLAMIRH's support. Even if it cannot be said during the time of PLAMIRH's functioning there have been substantial changes in the fate of endocrinology, or in the studies on reproduction, it can nevertheless be stated that some research lines have been developed and that new ones have come up. The greater impacts have been achieved by already established groups with a certain research tradition.

As for the nature of the research (basic or applied research) financed by PLAMIRH, it can be said that even if in the initial objectives of the Program attention was focused on applied research, further results show, however, that PLAMIRH-financed projects were actually focused on basic research 11/. These results are presented in Chart 3.

11/ The criterion used by PLAMIRH in the classification of projects had to do with finding out whether the research carried out on animals was regarded as basic research. If it was carried out on people (live, in vitro) it was classified as applied research.

CHART 3TYPE OF RESEARCH APPROVED

<u>BASIC RESEARCH</u>		<u>APPLIED RESEARCH</u>	
<u>Number</u>	<u>Amount (US\$)</u>	<u>Number</u>	<u>Amount (US\$)</u>
122	708,775	66	423,364
65%	63%	35%	37%

SOURCE: PLAMIRH. Final Activity Report.

In the evaluation of PLAMIRH it was stated that, "In the opinion of the members of the Executive Board this is so because, in general, requests for support to applied research have been low-quality ones. This makes us conscious of the fact that it is necessary to promote better research quality standards in the centers where applied research can have opportunities for its development" 12/.

In relation to the former comments, in the 1979 report from PLAMIRH mention is made of other factors that may contribute in explaining the situation described, among them the following ones: age of the researcher, time of dedication to research activities, greater capacity from the basic researcher for project's elaboration, and amount of the grant.

12/ Mariano Requena, Ricardo Asch and Henrique Tono. Op.cit., page 14.

With regard to publications, it should be highlighted that, as stated in the final report, "The results from PLAMIRH-supported research have given birth to 367 publications. Most of these publications have been published by journals of an international coverage (...) Likely, the partial results from the research have been presented in numberless meetings and scientific congresses (...) The results from PLAMIRH-financed research have served as the subject for many young researchers' theses" 13/.

It is unquestionable that the number of publications has increased and that new authors in the field of scientific literature on human reproduction have come up.

Finally, it must be highlighted that in spite of the difficulties in assessing the quality of the results attained through research activities, it is the opinion of the experts (gathered through the previous evaluation) that such quality standards are good. The fact that there is a high number of publications in international periodicals reporting these research experiences is a fair indicator about the quality of the research results obtained.

3.3. Institutional development

As it was previously stated, small grants are not the most adequate means through which new research groups might be formed, yet, they are in fact an excellent device for developing, up to a certain extent, already set research groups. It can be said that during the period of PLAMIRH's functioning research groups who counted on a certain tradition

13/ A detailed list of the above mentioned publications can be found in PLAMIRH's final report.

within the Latin American region were consolidated. Even more so, it has been acknowledged on the part of the researchers that had it not been for PLAMIRH, most of the research actually carried out would have probably never taken place.

Small grants are useful for maintaining a research group working on a specific area, and, generally, they accomplish their role on the basis of an existing material infrastructure (e.g., laboratories).

Through small grants it is not possible to purchase expensive or sophisticated equipment, however, they do perform an important role in the obtaining of supplemental equipment and materials' supplies (inputs necessary for executing laboratory trials).

PLAMIRH played an important role in this respect within various regional research groups. One must not forget that, on average, a 72% of the Program's budget was devoted to the purchasing of equipment and supplies 14/.

Obviously, PLAMIRH not only made an important impact on the development of administrative capacity within institutions themselves, but also on the projects' management training provided to researchers.

14/ A 27% of the projects' budget covered the salaries for researchers or support staff, and only a 0.8% of these funds was devoted to administration expenses. This aspect will be touched upon somewhere else in this document so as to specify some of the suggestions put forth by the researchers interviewed.

In the process of the research groups' consolidation and maintenance it is to be noted that, not only junior researchers joined the already set groups, but institutions were able to keep their traditional research staff since they counted on research grants towards this purpose (even if small ones). Had these small grants not existed, which is the case of several research groups in the region, many researchers from the institutional staff would have surely migrated elsewhere.

3.4. Development of a regional scientific community

By means of the small grants it was possible to build a researchers' network on the issue of human reproduction in Latin America. This contributed in acknowledging and legitimating the research area in itself, and, in addition, permitted communication among researchers from various countries. In the different meetings held by ALIRH (Latin American Researchers Association on Human Reproduction), it was found that PLAMIRH's researchers interchanged their experiences and reinforced their communication. By means of PLAMIRH, the links of the scientific community on human reproduction were strengthened. Likely, many young researchers were welcome to join the community.

As can be seen in PLAMIRH's final report, 116 researchers presented their research results in congresses and scientific meetings held on PLAMIRH's research area. The meetings and scientific congresses held on this area during the period of the program's functioning are of importance, both in terms of their number and quality. This indicates the opportunities researchers had not only to attend these gatherings, but also to present the progresses made and the results obtained through their work.

As a general synthesis reflecting the impact of PLAMIRH along its period of operation, it can be said, as stated in its final report, that "PLAMIRH has contributed in the furnishing and equipping of many institutions, it has facilitated pregraduate and postgraduate training, and it has contributed to the exchange of experiences among scientists in the region. In addition, the results from the Program-financed research have given place to communication among researchers, and new research lines have been opened".

4. OTHER IMPACTS IN THE REGION

4.1. Link of the Program with its potential users

The potential users of the results from the research carried out through PLAMIRH's support may basically be classified into three categories: policy makers from the countries in the region, the scientific community and the population in general.

In the present case, it is of interest to focus ourselves on the analysis of PLAMIRH's impact on policy-making decisions about human reproduction matters by the countries in the region. In this respect, it can be said that the incidence of PLAMIRH in policy-making stands at a low rate. In the cases in which some influence existed, it was just an indirect one through some researchers or members of the Executive Board or the Scientific Committee (the case of Roger Guerra-García from Peru, who, as a member of the Population Council, has indicated the need that Peru changes its policy by getting into the free practice of contraception).

In general, it could be stated that countries have adopted and defined their policies in this field in quite an independent manner from PLAMIRH's

functioning. What is undeniable is that the Program has brought about the building of consciousness over the issue of human reproduction.

4.2. Development of research management capacity

The development of research management capacity can be considered to be an educational role of PLAMIRH (it is particularly the case of the apprenticeship fulfilled by institutions and researchers in this regard).

PLAMIRH's final activity report states the following: "The majority of associate researchers and most of the principal researchers were granted research support for the first time and this provided them with an opportunity to learn about the procedures for reactive importation, local purchase of materials, hiring of personnel, periodical drafting of reports, administrative procedures for their respective posts, drafting of articles for publication, etc".

Another important aspect of PLAMIRH was the fact that research groups and researchers themselves were autonomous and empowered with decision-making to manage their respective projects.

The former, which is valid for research groups, is also applicable to people who were involved, one way or another, in the functioning of PLAMIRH (the Executive Board, Scientific Committee and Executive Secretariat).

5. LONG-STANDING EFFECTS OF THE IMPACT OF PLAMIRH

In this section it is attempted to establish the validity of the long-standing effects of the impact of PLAMIRH, which has been analyzed in Section 3, in regard to the training of human resources, the contributions

to knowledge and institutional development, and it is also attempted to try to define whether the acknowledgement and legitimacy of the scientific community still prevail. An effort will be made hereby to answer such questions as: if research groups still exist; if researchers are still active in their research endeavours, and, finally, if the contributions made through PLAMIRH as to scientific results and the quality of the labour carried out still prevail. Once established what is the status of the area on human reproduction nowadays, it proves necessary to try to establish and define what are the causes for the long-standing or non-long-standing effects of the impacts initially made.

Prior to getting some conclusions out of the evaluation carried out for the present document, it is essential to count on a general characterization of the main research groups who participated in PLAMIRH. Such a characterization on the status of research groups allows for delimitating the causes for what is happening at present, and to rightly differentiate which aspect of the crisis this sector is undergoing corresponds to the financing mechanism of small grants and which is independent from it.

5.1. Characterization on the present status of research groups in the region

Another element of the situation research groups are presently faced with is the economic crisis affecting the various countries in the Latin American region. As it will be shown later, this fact unevenly affects the regional research community. In some countries, in view of their research tradition and the acknowledgement society bestows on it, the impact of the crisis has not been so striking as in the case of less developed countries, whose research funds have been substantially

cut down. Some general comments on the various groups of countries are presented in the following paragraphs:

- (a) The groups from Uruguay have practically disbanded. Physicians have devoted themselves to the private exercise of medicine and biologists to the private exercise of clinical analysis. Only the Caldeiro group still continues to work in research on human reproduction. Two factors are highlighted as the causes of this situation: political instability and the wages problem.
- (b) The Argentinean groups showed the following characteristics:
- Groups set beforehand
 - Laboratories with a research tradition
 - Professionals internationally acknowledged who leaded young researchers working with them. This is the case of the R. Mancini group, who accounted for 30 years of experience in studies on the testicle, and the Cesar Bergada group, who has been internationally acknowledged for his work on infant endocrinology specifically related to the aspects of reproduction 15/.

The previous factors add to the fact that the National Council for Science and Technology (CONICYT) provided its support to research activities in the country. In addition, it must be taken into consideration that most of the human resources

15/ PLAMIRH helped junior researchers involved with these traditional groups in getting autonomy and independence from their trainers.

available were involved in research undertakings 16/.

These considerations explain why in spite of the country's serious economic crisis research work has been carried on, even if to a somewhat lesser extent.

The Mendoza group has kept on working for the reason that it has had support from CONICYT:

The Taleisnick group, principally devoted to neuroendocrinology, has kept on working. It is a private foundation. PLAMIRH's role in this group was the one of supporting new researchers in developing their own research lines.

With the exception of some researchers who have committed themselves to private exercise, research groups have sustained themselves as such and have continued with their research lines. Even more so, they will continue with their scientific yield in the future, which is periodically presented by means of their publications.

- (c) In the case of Chile, the Horacio Croxato group has maintained the line of action it had initially adopted through PLAMIRH. It has continued to receive external funding for applied research on the field of contraception. They also count on the support

16/ Those who were not linked to research activities, most of them university professors, even if having tried to undertake some research, have nevertheless devoted themselves to private exercise mainly. This was mostly the case of the groups associated with the faculties of medicine in Buenos Aires.

from the World Health Organization (WHO) and the Population Council.

A problem which has affected research in Chile, e.g., the case of the National University group, is the fact that the private exercise of medicine became a prosperous alternative upon the dismantling of social medicine in the country. People who were acknowledged by their research performance have been quite successful in the private exercise from the professional and economic perspective. The Bustos group (with a sound background on biology of reproduction) carries on with its research studies on the testicle and on genetics. They outstand because of the international funding they receive for their work.

In general, it can be said that in the Chilean case research groups have kept themselves active because of two circumstances:

- Some groups continue to receive external funding.
- There has been an internal funding policy to provide support to universities. An example of this is the fact that last year the University of Chile accounted for 6 million dollars for the financing of scientific activities in various areas by means of small internal grants.

(d) In the case of Mexico, research groups keep themselves active basically because of the following reasons:

- Some groups, like the Perez Palacio group, count on external funding (PAHO-WHO) to undertake applied research in connection with the family planning services provided by the National Nutrition Institute (the group has access to direct contact with patients and with the family planning unit of the Institute).

- Traditionally, wages for researchers have been competitive in the local market. Upon the Mexican economic crisis, the career of researcher was created with the view to favouring people devoted to research activities with bonus. This makes it evident that a national supportive policy to the research work undertaken in the country actually exists.
- The research community has counted on quite an ample grants' program since many years ago.

Regarding the area of reproduction, Mexico has implemented a strong program both on research-related and contraception issues. The country outstands within the Latin American region for the reason that social security (which in the rest of the region is implemented exclusively as a service-oriented institution) plays an important rôle in the research field.

On the other hand, the Mexican case is different from other cases in the region because of the fact that for some years now the country has been developing a very active contraception campaign, which has yielded funds for research activities.

As to the Mexican groups from the interior, PLAMIRH played a very important rôle in creating and developing them (e.g., the case of Yucatán). At present they continue with their research undertakings with support from PAHO and CONACYT.

- (e) In the case of Colombia, the University of El Valle group (Edgar Cobo and Rodrigo Cifuentes), has not continued with its research activities. These researchers are devoted to teaching and private practices. An argument put forth by the researchers from this group is that within the clinical environment, the private exercise of their activities is quite favourably competitive *vis-à-vis*

research practice. Obviously, young people have gradually detached themselves from institutional research commitment in view of the lacking financial situation of this sector.

As for scientific output, it is to be noted that productivity in this respect is no longer present in the international literature on medicine. Publications being currently issued are still prepared by using data generated through PLAMIRH's grants. Actually, literature stands at a low productivity level.

In the opinion of the Guerrero group, from the same university, and of the already mentioned research groups, once PLAMIRH came to an end other financial sources did come to an end as well. Domestic resources (channeled through COLCIENCIAS - a public entity charged with funding responsibilities) are indeed scarce for the area of human reproduction.

The group from the Military Hospital is presently absorbed by the private exercise of lecturing and clinical practices within the Hospital. They have oriented themselves towards clinical endocrinology.

- (f) The Peruvian case has probably been the most affected by the economic crisis, since, in general, national and international financial sources have practically disappeared.

The J. Descailleaux group from the University of San Marcos may probably be an exception to this situation. This group keeps itself active by means of small grants it has been granted by UNESCO, the International Atomic Energy Agency (IAEA) and IFS.

These small grants have allowed them buying laboratory reactivities and chemicals, and some bonus funds. A characteristic of this group is that it is composed of biologists who, in the country's present circumstances, have little opportunities for private exercise.

A different case is that of the high-level research team that had been developed long ago at the Cayetano Heredia University, basically formed of physicians. They either have migrated to important managerial positions within the country (the case of Roger Guerra-Garcia), or to private exercise (the case of Juan Coyotupa, a well-known professional in the area of endocrinology).

Another group who keeps up to research activities, even if under quite precarious conditions, is the one of the Hospital Dos de Mayo (the Garmendia group). This group is working on physiology of reproduction in altitude (a continuation of the research line initiated by PLAMIRH). This group, together with the Descailleaux group have initiated publishing activities at the international level. By means of PLAMIRH's funding they were related to the zone of Cuzco which counts on a more representative and homogeneous Highlands population. The Garmendia and Descailleaux groups are strongly related to each other. The success attained by the researchers from the Hospital Dos de Mayo lays in the fact that they have maintained their international contacts.

5.2. Final comments

As shown by the quick characterization of research centers presented in the previous section, the economic crisis in Latin America has

unevenly affected the countries in the region regarding their research policies and the maintenance and development of research groups. A synthesis of some of the aspects worth mentioning follows:

- (a) The difficulties affecting research groups are independent from PLAMIRH's financing mechanism (Small Grants Program).
- (b) More developed countries with a research tradition have been able to keep their research groups on human reproduction.
- (c) In the countries more affected by the economic crisis, not having the state's solid support to research activities, research groups on human reproduction in general have not been able to keep up to their endeavours, excepting for a few of them who still receive external grant support. The groups without this characteristic have shown a high human resources migration towards private practice.
- (d) There is a neat differentiation in the groups' behaviour between the groups composed of physicians and those formed of biologists in the countries which have been more affected by economic hardship. Medical doctors easily shift from research activities into the private exercise of medicine because of the wages problem; on the other hand, biologists count just on a limited labour market, which has lead them to keep up to research activities, such as the case of the Descailleaux group.
- (e) Even if some groups continue to publish their research experiences in international journals, the intensity of this activity has gradually decreased.

- (f) It should be stated that the thematic area on human reproduction has carried on with its activities in the region because of the fact that both active and non-active researchers in this area have kept up to the field of human reproduction by means of the private exercise of research, lecturing or professional activities.

Finally, it should be noted that PLAMIRH's influence was important within the existing groups, both in terms of the training of human resources and the support provided for implementing new research lines. This influence has also positively affected people who did not carry on with their research work but committed themselves to lecturing and private practice.

The small grants' mechanism was considered to be extremely important for maintaining research groups up to their endeavours, as well as for having junior researchers get themselves involved in the important field of research.

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