

transfect and all that, will give me still much pleasure as we tackle more and more intricate biological problems. ■

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The beginnings of the BIOQ-FAPESP Project: A personal perspective

The so-called BIOQ-FAPESP Project was sponsored by the "Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP)" to foster the development of biochemistry in the city of São Paulo. Its implementation, in the early seventies, was responsible for the installation of several new biochemistry research groups and the strengthening of already established ones. It benefited the Departments of Biochemistry of the Institute of Chemistry of the University of São Paulo (USP) and the "Escola Paulista de Medicina (EPM)", as well as the EPM Department of Biophysics.

It was a happy coincidence that the implementation of this project came shortly after the University reform at USP. This allowed young investigators, several of them just returning from their postdoctoral training in the USA, to have access to funds on a scale which could not be expected in previous years. Furthermore, this immediately put these young leaders on equal footing, as far as research capability was concerned, with the established professors originating from the biochemistry chairs of the Biochemistry Departments of the old Colleges

(Medicine, Pharmacy, Veterinary Medicine as well as the Faculty of Philosophy, Science, and Letters). These Chairs or Departments were integrated by the University Reform to form the new Biochemistry Department of the Institute of Chemistry at USP. This resulted in a great shift in the power structure and created conditions for the University Reform really to take place in this Department. This was one of the main results of the BIOQ-FAPESP Project. The other, which was its specific aim, was to give a great impetus to the development of biochemistry in the city of São Paulo. The quality and quantity of scientific production in the field of biochemistry in the city has greatly increased since then.

The late sixties were a fertile period for university life in Brazil. The winds of the French University Reform were felt here, and there was considerable unrest among students and faculty. This eventually resulted in the establishment of the Parity Committee at the Faculty of Philosophy, Science and Letters, which was fighting for University Reform here as well. Although at the time we were under a military dictatorship, which

would become more brutal with the infamous AI-5 ("Ato Institucional no. 5"), the economy was in fairly good shape. In the State of São Paulo, the FAPESP was already recognized as a very respectable institution dedicated to the support of Arts and Science. At the federal level, the "Conselho Nacional de Pesquisas (CNPq)" was then very active, far from its present sad situation. As for the biochemical sciences, the Brazilian Biochemical Society was reactivated in July 1967 and at first started to have Annual Meetings jointly with those of the Brazilian Association for the Advancement of Science. This Society was soon thereafter involved in the Multi-national Biochemistry Program and took an active part in the establishment of the Committee of Latin American Scientists in the Biochemical Sciences ("Comitê Latino-Americano de Bioquímica - COLAB"), which put Brazilian biochemists in closer contact with their Latin-American colleagues, particularly those of Argentina, Chile and Mexico. There were then several active research groups in the field, publishing in internationally recognized journals. Students who had recently obtained their PhD degree in these groups were in postdoctoral

training, mainly in USA laboratories and several others would follow these in similar efforts. The compulsory retirement of several biochemists by the military government was a disgrace. However, the retired scientists, who were all of good academic quality, quickly found positions abroad, from which they had a positive influence on the local scene. Thus the biochemical community in Brazil, particularly in São Paulo, was in good shape and ripe for further development.

It so happened that at the time, I was a young biochemistry professor with an interesting research project in a new area. I had been chosen as Executive Secretary of the Brazilian Biochemical Society and as the first Head of the Biochemistry Department of the Institute of Chemistry, USP. I believe that, as a consequence of this, I was the main adviser in the field of biochemistry to Professor Oscar Sala, who had taken the post of Scientific Director of FAPESP, following Prof. Alberto Carvalho da Silva, who had been dismissed from this post and compulsorily retired from the University of São Paulo by the military government. Early in 1970 I had to give to Prof. Sala difficult referee reports on two projects which were submitted to FAPESP. Actually, I ended up writing him a long letter in which I made a critical review of the state of development of Biochemistry in São Paulo. This letter fell on a receptive mind and he must have liked what I wrote. He told me he felt that biochemists should be supported by FAPESP, on a different scale to the "over the counter" policy then used by FAPESP regarding all areas of knowledge. He furthermore asked me to organize a proposal in this sense to be submitted to FAPESP. As a result of this request I established an informal Committee composed of Professors Metry Bacila, Hernan Chaimovich, Walter Colli, Carl Peter von Dietrich, Antonio Ceccheli de Mattos Paiva and myself in the role of Coordinator. This Committee met several times during the second semester of 1970, and although Prof. Sala never participated in any of its meetings he had an active participation through conversations he maintained

with several of the committee members. The discussions held gave rise to the document "A plan for the development of biochemistry in the city of São Paulo", which was submitted to FAPESP in November, 1970.

Diagnosing the status of biochemistry in São Paulo at the time, the plan states:

"A survey of the research groups existing at present in the city of São Paulo, reveals points of strength as well as weakness.

As points of strength one notes that there are several groups which are quite productive, and that many of the scientists are internationally recognized. Furthermore there has been, particularly in recent years, the opening of new fields of research.

As points of weakness we find: a) a relatively small number of active research groups; b) a small number of senior investigators in each group; c) absence of representation in many important fields; d) few groups are attacking problems in applied biochemistry.

There is a point of weakness in biochemistry in São Paulo, which is not so apparent. This is the fact that our biochemistry, for historical reasons has had a poor interaction with chemistry and physical chemistry. This might be one of the reasons why biophysics has not developed properly in São Paulo, and why there is so little interaction between biochemists and scientists working in other fields such as mathematics, physics and even organic chemistry.

The objectives and recommendation of the plan were: a) to pool efforts to assure more efficient utilization of human resources; b) to raise the standards of research and teaching in biochemistry in São Paulo, so that it would become a center capable of supporting a strong postgraduate training program. This would make São Paulo an example for the country and Latin-America, as well as make it attractive to visiting professors and postdoctoral fellows; c) to link biochemistry efficiently with the mechanism of general development of the country by establishing mission oriented programs".

To reach these important goals

the plan proposed the creation of a special "Fund for the Development of Biochemistry in São Paulo", to be applied over a period of three years. At the end of this period the Institutions that benefited from the fund should assume responsibility for the maintenance of a substantial part of the program. The fund should be used to:

"1) Create and maintain special laboratories where more expensive equipment and teaching will be available to all qualified workers in the area; 2) organize common services such as instrumentation shops, to help in the designing of equipment as well as to maintain and repair scientific instruments; 3) purchase, in a coordinate manner, equipment and supplies in order to avoid unnecessary duplication or improper acquisition of instruments. A pool of repair parts and common reagents should thus be created to the advantage of all concerned; 4) support a program of visiting professorships and a program of exchange of personnel with more advanced centers; 5) increase the availability of scientific information to biochemists, allowing funds for participation of all research groups in computer-aided literature programs and for air mail delivery of important journals; 6) support research projects both in basic and in applied biochemistry; 7) provide for the supplementation of salaries of scientific, technical and auxiliary personnel, when necessary; 8) provide a reserve from which new research groups or projects could draw upon within the next three years; 9) finance a specialized study of the needs, in terms of biochemistry, for the development of the State of São Paulo within the next three years."

All these proposals, if implemented, would create working conditions for the biochemists of São Paulo unparalleled in Latin-America. They also immediately created an important ethical question: the availability of resources on a large scale would place these biochemists in the strange situation of "judges and interested parties" at the same time. This situation was resolved by a suggestion of Prof. Sala that there

should be an International Advisory Committee to act as an impartial forum for the evaluation of the individual projects and progress reports. This was a bright idea, which made the project international and put a large restriction on the specific research projects which could be accepted: they would have to be written in English, which was not so easy in those days. As a consequence it was proposed in the plan that its administration should be as follows:

"The administration of the Fund should be delegated to a Committee composed of five biochemists, who will review the projects to be supported, paying particular attention to the soundness and general strategy involved, to the reasonableness of the proposed mechanisms, to the wisdom of the goals and the adequate distribution of the Fund's budget.

This Committee should be assisted by an International Advisory Panel whose function will be to provide an impartial and informed forum for the review of the projects that might be supported by the Fund. The above-mentioned Committee and Advisory Panel would be effective if the following measures were taken: a) Members of the Committee and the Advisory Panel should be able to devote the time and effort required to make sound decisions and assist in carrying them out easily and quickly; b) it is essential that the procedures for deciding what and who to support be simple and with a fast response time; c) effective accountability of the use of the funds is essential, but the means for ensuring accountability must be simple; d) the Committee should meet at least once every month and there should be a yearly meeting of the Committee with

The budget proposed in the plan in US dollars was:

1. Projects of common interests	
1.1. Analytical Ultracentrifuge Laboratory	28,250.00
1.2. Spectropolarimetry Laboratory	25,450.00
1.3. Peptide Synthesis Laboratory	67,860.00
1.4. Scintillation Counters and Centrifuges	113,500.00
1.5. Electronics Instrumentation Shop	20,000.00
1.6. Personnel Exchange Program	160,000.00
1.7. Information Exchange Program	20,600.00
1.8. Survey of the needs in terms of biochemistry for the State of São Paulo	10,000.00
2. Funds for future development (next three years)	300,000.00
3. Administration of the project	20,000.00
4. Specific Research Projects	550,000.00
Total	1,315,660.00

the Advisory Board to conduct an assessment of the progress achieved and the special measures that should be taken."

The biochemists who then submitted proposals of specific research projects were: HA Armelin, M Bacila, RR Brentani, HG Chaimovich, G Cilento, W Colli, CP von Dietrich, JF Fernandes, FJS Lara, JR Magalhães, R Meneghini, ACM Paiva and JL Prado.

The first International Advisory Panel was composed of Professors Philip P Cohen and Gerald C Mueller from the University of Wisconsin, Marshall Nierenberg from the National Institutes of Health and Bernard Horecker from the Roche Research Institute.

At the time that this Advisory Board first met with the local Committee a series of events took place at the Department of Biochemistry of the Institute of Chemistry which led me to resign from the positions of Head of the Department and Head of its Graduate Biochemistry Com-

mittee. This also led to my substitution as Coordinator of the local Committee by Prof. ACM Paiva, who conducted the project with great ability. Personally I am happy that Prof. Sala made this choice. It was fundamental for the success of this project, which was an early precursor of many worthwhile FAPESP initiatives in its role in the support of Science in the State of São Paulo. I am also very happy that after these events I was able to go back to my laboratory where, since then, my students and I could make significant contributions to the understanding of the molecular biology of the DNA puffs of *Rhynchosciara*.

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