



Events to determine Biotechnology demands in MERCOSUR

BIOTECSUR – ALA – 2005-017-350 – 1b

REGIONAL SEMINAR BIOTECHNOLOGY IN THE HEALTH SECTOR

Support Program for Biotechnology development in MERCOSUR

European Union Cooperation – MERCOSUR

BIOTECH



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1. PLACE, DATE AND DURATION

CITY/COUNTRY: Montevideo, Uruguay

DATE: December 10th, 2008

WORKSHOP LOCATION: Holiday Inn Hotel

SECTOR: Health

2. PARTICIPANTS

Participants: Annex 1

Coordinator: Carlos Robello

Moderator: Lic. Gonzalo Fuentes Coiana (Uruguay)

3. WORKING PROGRAM

Annex 2 includes the working program developed during the Seminar.

4. SUMMARY OF ADRESSED MATTERS

4.1 Summary of the State of the Art in MERCOSUR

According to the Convention on Biological Diversity (1992), biotechnology may be defined as *“any technological application that uses biological systems, living organisms or derivatives thereof, to make or modify products or processes for specific use”* (UN).

Biotechnology has had high impact on Human Health, due to the advances and discoveries related to recombinant DNA, genomics, in the elucidation of the human genome as well as the pathogens study, the study of acid nucleic microarrays at a large scale, protein engineering and monoclonal antibodies, GMO generation, gene therapy, biopharmaceutical, among others.

The current situation in MERCOSUR countries is clearly different taking into account the following factors:

a) Territorial differences: In Paraguay and Uruguay, most of the scientific and technological development is concentrated on capital cities, and even when it gives higher interaction and complementarities, it also means a scarce development of biotechnological business, a lower articulation between discovery and application. Argentina and Brazil (especially Brazil) show a wide distributed map of investigational institutions and biotechnological business.

b) Political organizational differences. The existence of Science and Technology Ministries in Brazil and Argentina, show a careful design of biotechnological policies according to national realities and needs. In this sense, Uruguay has stepped forward with the creation of the National Agency of Investigation and Innovation (ANII), whose objective is the articulation of governmental scientific policies, directly influenced by the involved ministries. On the other hand, Paraguay finds itself in a reality defined as hard to be removed by its representatives, due to the inexistence of clear systems to centralize the information, which does not mean there is an incipient development in several institutions.

c) Regulations. This point comes off the above-mentioned ones. As long as there is an asymmetrical development, regulations have uneven development as well. On the other hand, taking into account that all legislation about this is territorial, this point deserves a special approach in order to favor regional development exchanges, which will benefit Biotechnological growth.

Within this context, the workshop discussion was centered on each country's priority and the way to share mutual needs.

4.2 Objectives and Methodology

The objective of this activity was to generate supplies for the strategic planning process that BIOTECH is launching to promote biotechnological development in MERCOSUR. To do this, the Project proposed the creation of regional agreements on two areas previously analyzed by each country, in the corresponding national workshops i) identify mutual prior subjects for biotechnological development in the sector and ii) agree on analyzing the existing capacities to promote biotechnological development for these subjects.

A plenary was set for the discussion. First of all, UGP representatives presented a form with the list **Prioritized Subjects Identified in National Workshops**, including the corresponding points assigned to each subject by each country, from 1 (no priority) to 5 (high priority). 4 to 5 (color green in the tables) were assigned to subjects considered of higher importance or urgent; 3 (yellow) for subjects of lower importance; 1-2 (red) low importance subjects; white color where an answer does not correspond.

The list also included the average evaluation points of each subject's priority, calculated as the arithmetic mean of the points assigned by each country. The list was put into the group's consideration, with the objective of reaching a consensus on the exact nature of the prioritized subjects and to create agreements on the level of priority regionally assigned to each one of them.

In a second instance, UGP representatives presented another form, **Capacities Analysis**, made for all prioritized subjects, by each country. The analyzed capacities were the following: human resources, academic capacities, equipment, financing, industrial capacities, regulations, scaling and transfer, inter-institutional relations, cross-sectoral relations, incubators and technological poles, public investment and risk capital, interdisciplinary approach and technological management. That form showed the grading assigned to the existing capacity of every subject, by each country. Points went from 1 to 5, 1 being the worst situation and 5 the best one, 4-5 (green) for satisfactory capacity; 3 (yellow) good capacity; 1-2 (red) bad and/or inefficient capacity. The list was put under the group's consideration in order to define the analyzed capacities and agree on the points to be assigned to each one of them in a regional level.

4.3 Discussion

As previously explained, based on the results obtained from the countries' evaluations, subjects were open for discussion between each sector's representative, where they obtained results were communicated and explained.

4.3.1 Analysis of priorities

In reference to the matrix of priorities, all subjects prioritized by the four countries coincided as shown in the points given to the addressed subjects by each country (table 1).

The following detailed discussion of each detailed subject is based on the analysis of opinions, as well as the quantitative data of table 1.

Regional and unattended diseases

About this point either work towards prevention, diagnosis or treatment, is important. It is also relevant to say that regarding regional and unattended diseases there are already created networks, which result as an added value.

The four countries agreed that this subject should be approached by all governments through academics (universities, Investigation Institutes), primary investigation, and the companies' role would be the commercial rise. It is emphasized that Brazil agrees on the subject prioritization in spite of already having state policies and a higher development of it.

Emergent diseases

The concept of emergent diseases refers to infectious diseases and they are a part of the epidemiologic surveillance.

Diagnosis

It is a regionally developed subject regarding diagnosis; maybe the most developed one amongst private companies articulated with the academy, by means of immunochemistry and biology molecular techniques.

Technological platforms (biotechnological process engineering, laboratories centralized on high throughput screening, micromatrices, vector engineering and cellular lines, etc.)

There is a vast consensus on this point. Nevertheless, it has been divided into three large areas due to its wideness.

1) Enabling platforms. (Tools)

2) Pre-Productive Platforms. Referred to scaling, those platforms that prepare discovery to be subsequently commercialized.

3) Bioinformatics. This discipline has several points of view, and goes across the platforms.

The second one, out of the three points, is the most important from the necessity point of view within the region. Enabling platforms as well as bioinformatics have had an important development in the region, but that is not the case of the pre-productive ones, where private businesses should have a leading role.

Another highlighting point is that new technologies will require more HHRR despite incipient bioinformatics' development, which accentuates the need for training in this area.

Antimicrobials

All four countries agreed on this point's evaluation.

Monoclonal and recombinant antibodies and recombinant proteins

They decided to group this components as preventive, diagnosis and therapeutic value.

Preventive and therapeutic vaccines

The agreement is to unite these two subjects, giving priority to preventive vaccines despite the lower points given to the second ones.

New subjects considered as priority, added to the list:

During the National Workshop held in Uruguay, new subjects were added to the list. This Workshop took place after the ones held in Argentina and Paraguay; that is why both countries representatives were asked to rate the subjects according to each country's priority, during the Regional Seminar, leaving the following as MERCOSUR priorities:

New generation genomics

Nanobiotechnology

TABLE 1: Identification of prior subjects

	Argentina	Brazil	Paraguay	Uruguay	Mercosur
1. Technological platforms: biotechnological process engineering, Laboratories centralized on high productivity and screening methodology, micromatrices, vector engineering and cellular lines, formulation and administration systems	5	5	4	4,4	4,6
2. Bioinformatics	5	5	3,4	4,2	4,4
3. Monoclonal, bispecific and recombinant antibodies. Recombinant proteins.	5	5	3,7	4,1	4,5
4. Recombinant proteins. Production of Transgenic plants and animals (to replace hemoderivatives).	5	5	3,4	3,4	4,2
5. Therapeutic vaccines (cancer, hepatitis, psoriasis, etc.)	4	5	3,5	3,3	3,9
6. Preventive vaccines.	4	5	4,1	3,5	4,1
7. Cellular therapy. Gene therapy. Stem Cells. Tissue engineering.	5	5	3,2	3,4	4,1
8. Antimicrobials (resistance and new agents' development). Including the search of new vegetal and animal antimicrobials	5	5	4,4	3,7	4,5
9. Regional and unattended diseases. Chronic (contagious and non contagious), zoonotics, passed on by vectors, maternal and childhood diseases (Prevention-Diagnosis-Treatment)	5	5	4,7	4,5	4,8
10. Emergent diseases.	5	5	4,4	4,6	4,7
11. Clinic research for the development of new products	5	5	3,7	3,8	4,4
12. Diagnosis	5	5	4,4	4,3	4,7
13. Medical plants and phyto-drugs	no info	5	3,8	3,4	4,1
14. New generation genomics (pathogens, diagnosis, pharmacogenomics, etc)	no info	5	4,2	4,2	4,5
15. Drug design. Laboratories centralized on high productivity and screening methodology. Formulations and administration systems.	no info	5	no info	3,8	4,4
16. Nanobiotechnology	no info	5	no info	3,8	4,4
17. Biomaterials	no info	5	no info	3,3	4,1

Note: In Uruguay, the following was removed from item 1: “Drugs design. Laboratories centralized on high productivity and screening methodology. Formulations and administration systems”, with a total of 3.75 points, less than an average platform (3.9). Nanobiotechnology, new generation Genomics and Biomaterials were also added.

4.3.2 Capacities analysis

The analysis was based on quantity information presented in table 2 plus comments aroused from the plenary discussion. The highlighted points of this analysis are detailed as follows:

Human resources:

The scarce existence of purely biotechnological projects in the region has generated an asymmetry in the training of human resources (Table 2). There is an important group of researchers responsible for the different levels of training, whose capacity would let them work in innovation. But the productive sector has not had a similar growth in this sense, which results in an important deprivation. This is a necessity to be taken into account for biotechnology developing programs.

Cross-sectoral Relations:

If we understand cross-sectoral relations as a tool for biotechnological development, the existence of communication and join efforts of the different sectors involved in Biotechnology (public/academic, private/business/industrial) is considered of great importance.

The existence of state policies is considered necessary to support and stimulate these relations. Brazil already has state policies in this sense, which can be used as a model to create proposals in the rest of the countries.

Interinstitutional relations:

The situation of the four countries was defined as bad, except for Uruguay that shows examples of teamwork in different institutions (Table 2). The teamwork of the institutions involved in the development of a biotechnological product, from investigation (academic), product development (business), to its way to the market (industry), require joint efforts of interinstitutional and cross-sectoral groups.

Public investment and risk capital:

It is considered a weak point in the region. It is almost nonexistent in the whole region, with the exception of few examples.

Technological management:

Lack of human resources specifically trained for technological management.

Incubators:

The experience of Brazil stands out as an example. The rest of the countries showed a lack of it.

Public investment / Risk capital:

Lack of public and private investment in I+D. All countries face the same situation regarding this point.

TABLE 2: Capacities Analysis (Part 1)

PRIORITIZED SUBJECTS	HHRR				Equipment				Financing				Industrial capacities				Regulations				Public academic capacities			
	A	B	P	U	A	B	P	U	A	B	P	U	A	B	P	U	A	B	P	U	A	B	P	U
Regional and unattended diseases	3	5	4	3	3	5	3	2	3	5	2	2	3	2	1	1	2	2	3	1	4	5	3	3
Emergent diseases	3	5	4	3	1	5	3	3	1	5	2	1	3	2	1	1		2	3	1	3	5	3	3
Diagnosis		5	4	5		5	3	5		5	1	3		2	1	3		2	2	1		5	3	5
Technological platforms	1	5		2	1	5		3	3	5		2	1	2		2	3	2		2	3	5		2
Antimicrobials	3	5	4	3	3	5	3	3	1	5	2	3	1	2	1	1	1	2	1		3	5	3	3
Monoclonal antibodies	3	5		3	3	5		3	1	5		2	1	2		1	3	2		1	3	5		3
Bioinformatics	1	5		3	1	5		5	1	5		3	1	4		1		4		5	1	5		3
Preventive vaccines	3	5		1	3	5		3	3	5		1		2		1	2	2		3	3	5		1
Clinic research – new prod		3				5				5				2				2				5		
Recombinant proteins	4	5		3	3	5		3	3	5		3	3	2		1	3	2		1	4	5		3
Cellular therapy genic, etc.	2	5		3	2	5		3	1	5		1		2		1	1	2		1	1	5		3
Therapeutic vaccines	3	5		3	3	5		3	3	5		3		2		3	2	2		1	3	5		3
New generation genomics		5				5				5				2				2				5		
Medical plants and phyto-drugs		5	3			5	1			5	1			2	1			2	3			5	3	
Drug design		3	1	3		3	1	3		3	1	3		2	1	1		2	1	1		3	2	3
Nanobiotechnology		5	5			5	3			5	3			3	1			2	1			5	3	
Biomaterials		5				5				5				3				2				5		

TABLE 2: Capacities Analysis (Part 2)

PRIORITIZED SUBJECTS	Scaling and Transfer				Interinstitutional Relations				Cross-sectoral Relations				Incubators/Poles				Public investment/Risk capital				Interdisciplinary approach				Technological management			
	A	B	P	U	A	B	P	U	A	B	P	U	A	B	P	U	A	B	P	U	A	B	P	U	A	B	P	U
Regional and unattended diseases	1	3		1	2	2		4	1	3		3	2	3		2	1	2		1	1	4		4	1	3		2
Emergent diseases	1	3		1	2	2		3	1	3		3	2	3		3	1	2		1	1	4		3	1	3		1
Diagnosis		3		3		2		5		3		3		3		3		2		1		4		5		3		3
Technological platforms	1	3		1	2	2		3	1	3		1	2	3		1	1	2		1	1	4		5	1	3		1
Antimicrobials	1	3		1	2	2		3	1	3		3	2	3		1	1	2		1	1	4		3	1	3		1
Monoclonal antibodies, others	1	3		1	2	2		4	1	3		3	2	3		3	1	2		1	1	4		3	1	3		2
Bioinformatics	1	na			2	4		5	1	4		3	2	4		1	1	4		1	1	4		5	1	4		3
Preventive vaccines	1	3		1	2	2		1	1	3		3	2	3		1	1	2		1	1	4		1	1	3		1
Clinic research – new prod		3				2				3				3				2				4				3		
Recombinant proteins	1	3		1	2	2		3	1	3		3	2	3		1	1	2		1	1	4		3	1	3		1
Cellular therapy genic, etc.	1	3			2	2		3	1	3		1	2	3		3	1	2		1	1	4		3	1	3		1
Therapeutic vaccines	1	3		1	2	2		3	1	3		3	2	3		3	1	2		1	1	4		3	1	3		1
New generation genomics		3				2				3				3				2				4				3		
Medical plants and phyto-drugs		3				2				3				3				2				4				3		
Drug design		3		na		2		5		3		1		3		1		2		1		4		3		3		3
Nanobiotechnology		3				2				3				3				2				4				3		
Biomaterials		3				2				3				3				2				4				3		

4.3.3 General proposals for BIOTECH's Platform

Although the main objective is the creation of networks to generate collaborative projects within the framework of the 7th EU Frame Program, the framework given by BIOTECSUR is an opportunity to create a platform for biotechnological strategies to make an impact in academics, the private sector and medium and long term policies in the region.

All countries agreed that the creation of such platform shouldn't only aim to compete against EU projects, but should also help to establish it, make it competitive and sustainable to generate competitive projects to be supported by new financial sources.

This Platform will also have to support biotechnological regulations, previously mentioned in "Precedents". To do this, there is a need for straight communication between the Platform and those governmental actors in charge of these aspects. Since this is a complex subject to address, and regulations are territorial, each country must resolve the subject individually to then make an agreement with all countries belonging to the bloc, if possible.

5. CONCLUSIONS

Creation of a group of professionals. The proposal is to create a group of health professionals to stay in touch for the creation of international team works, favorable for the development of the region.

Networks. Next year there will be a group of NETWORK consultants to facilitate its creation and management.

Creation of a forum. There is an open invitation to all health researchers to subscribe and make communications easier. This will be made through the official Biotecsur Project web site (www.biotecsur.org).

These three elements must result in a Platform FUNCTIONALITY, by means of a clear and democratic communication with the whole group.

Objectives Alignment: Since the countries agreed on the priority of the subjects, it is important that the same ones are used as reference to begin the creation of MERCOSUR platform networks.

Finally, for future workshops it is proposed to break down prioritized subjects in products, problems and tools. It will be necessary to purge the list and separate them in at least three groups to study these subjects in depth.

6. ANNEXES

Annex 1. List of participants

Country	Name	Institution
Argentina	Juan Dellacha	Foro Biotecnología
	Alberto Díaz	Universidad Nacional de Quilmes
	Marcelo Dankert	Fundación Campomar Actual Inst. Leloir
	Verónica Carbone	Biosidus
	María Susana Vitali	Universidad Nacional de Córdoba, Laboratorios de Hemoderivados
Brazil	Paulo Péret de Sant´Ana	Ministerio de Ciencia y Tecnología
	Leonardo Mandalho Lima	Mantecorp
Paraguay	Dra. Antonieta Rojas de Arias	OPS/OMS
	Dra. Graciela Velázquez	IICS-UNA
	Dr. Vet. Andres Avalos	FCV-UNA
	Miriam Rolon	CEDIC
	Norma Coluchi	CEDIC
	Rosa Guillén	Depto. de Biología Molecular
	Dra. Nelida Ydoyaga	SENACSA
Uruguay	Hugo Naya	Instituto Pasteur
	Mercedes González	Facultad de Ciencias UdelaR
	Juan Claudio Benech	IIBCE
	Sandra Frabasile	Facultad de Ciencias UdelaR
	Andrés Abin	Laboratorio Celcius
	Walter Staininger	Botica del Señor
	José Luis Faluótico	CEMED
	Gonzalo Cid de la Paz	MSP
	Carlos Robello	Instituto Pasteur
	Sofía Chabalgoity	PROMESUR
	Delia Sánchez	GEOPS

Annex 2. Workshop Program



PROGRAM **Regional Seminar for the Identification of Regional Biotechnological Demands in MERCOSUR in the Health sector** **December 10th, 2008 – Montevideo, Uruguay**

08:30	Participants accreditation
09:00	Explanation of event objectives Responsible: Focal Point Support Program for Biotechnological Development Uruguay
09:15	Explanation of workshop methodology and personal presentation of participants Responsible: Moderator
10:00	Presentation of the sector and demands of Argentina Responsible: Argentina's health Representative
10:30	Presentation of the sector and demands of Brazil Responsible: Brazil's Health Representative
11:00	Coffee break
11:30	Presentation of the sector and demands of Paraguay Responsible: Paraguay's health Representative
12:00	Presentation of the sector and demands of Uruguay Responsible: Uruguay's health Representative
12:30	Presentation of matrices to prioritize demands Responsible: International Technical Assistant Representative of the Support Program for Biotechnological Development in MERCOSUR – Biotecsur
13:00	Lunch
14:00	Full analysis of matrix of priorities Responsible: Moderator and International Technical Assistant
15.30	Presentation of summarized forms of capacities and vacancy areas (strengths, weaknesses) Responsible: International Technical Assistant
16:00	Coffee break
16:30	Full analysis of matrix of capacities and vacancy areas Responsible: Moderator and International Technical Assistant
17:30	End of the Workshop
21:00	Comradeship dinner

Alojamiento y Seminario:
Hotel Holiday Inn, Colonia 823
Tel.: (00598-2) 902 0001/ web: www.holidayinn.com.uy

