

The Latin American Society for Developmental Biology: a successful history

PABLO WAPPNER¹ and MARIO ZURITA^{*,2}

¹Instituto Leloir, Departamento de Fisiología y Biología Molecular, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Buenos Aires, Argentina and ²Departamento de Genética del Desarrollo y Fisiología Molecular, Instituto de Biotecnología, Universidad Nacional Autónoma de México, México

ABSTRACT The Latin American Society for Developmental Biology (LASDB) is one of the newest societies in this field. However, despite being new, this society already had a highly important impact on the advancement of Developmental Biology across Latin America and globally. From its conception, the society began with the establishment of courses and congresses at the frontiers of knowledge and with the participation of researchers from Latin American countries and other regions, creating an academic and fraternal environment. The first LASDB congress was held in 2003, and recently, in 2019, the LASDB celebrated its tenth meeting, besides the Pan-American congress organized in 2007. Since the creation of this society and throughout its consolidation, the LASDB has been fortunate in receiving the support of highly prominent Developmental Biology societies, with which it has established links and collaboration that have clearly promoted Developmental Biology not only in Latin America but also in other parts of the world. At this moment, the LASDB looks to the future to continue supporting science in Latin America as it has done up to the present.

KEY WORDS: *Developmental Biology, Latin America, Congress, Courses*

This special issue of *The International Journal of Developmental Biology* is dedicated to Developmental Biology in Ibero-America. Although several Latin American scientists, specialized in Developmental Biology, frequently organize meetings and courses in South America, the creation of the Latin American Society of Developmental Biology (LASDB) has been a major driving force behind the advancement of Developmental Biology in this region over the last 17 years. The creation of the LASDB, similar to other academic institutions, has had an interesting history. As noted above, various South American countries, such as Argentina, Brazil and Chile, traditionally organized international scientific courses and meetings with the participation of scientists from all over the world. In Chile, Roberto Mayor, then at the University of Chile in Santiago, frequently organized excellent Developmental Biology courses in the Andes (for more details about these courses see Mayor in this issue). The students of the two first versions of this course (1999 and 2001) asked Roberto Mayor to organize a virtual network to maintain the interaction among students and faculty, and eventually extend it to other developmental biologists in Latin America. Roberto Mayor thought that it was a good idea and asked Edward (Eddy) de Robertis (UCLA), President of the International Society for Developmental Biology (ISDB) at that time, about it. Eddy

thought that a society could be better and they exchanged a series of e-mails analysing the advantages and detriments of a Networks versus a Society; at the end they concluded that a society should work better for the purpose of promoting developmental biology in the region. Thus, Roberto created the LASDB in 2002 with the important support from the ISDB, and the next year, in 2003, Roberto and Miguel Allende (also from the University of Chile in Santiago) organized the first LASDB meeting in Valle Nevado, a beautiful location in the Chilean Andes, and by unanimous decision Roberto Mayor was elected as the first President of the LASDB. The LASDB board was also ratified in that meeting and included Miguel Allende (Chile), Jorge Allende (Chile), Cristina Arruti (Uruguay), Enrique Castellon (Chile), María Isabel Camejo (Venezuela), Eugenia del Pino (Ecuador), Ricardo Ehrlich (Uruguay), Juan Riesgo Escovar (Mexico), Ricardo Ramos (Brazil), Martha Valdivia (Perú), Pablo Wappner (Argentina), Marcelo Cabada (Argentina); Jose-Xavier Neto (Brazil), and Mario Zurita (Mexico). The external board of

Abbreviations used in this paper: ISDB: International Society of Developmental Biology; LASDB: Latin American Society for Developmental Biology; MSDB: Mexican Society of Developmental Biology; SDB: Society of Developmental Biology.

*Address correspondence to: Mario Zurita. Departamento de Genética del Desarrollo y Fisiología Molecular, Instituto de Biotecnología, Universidad Nacional Autónoma de México. Tel: 52 555 6227659. E-mail: marioz@ibt.unam.mx -  <https://orcid.org/0000-0002-8404-2173>

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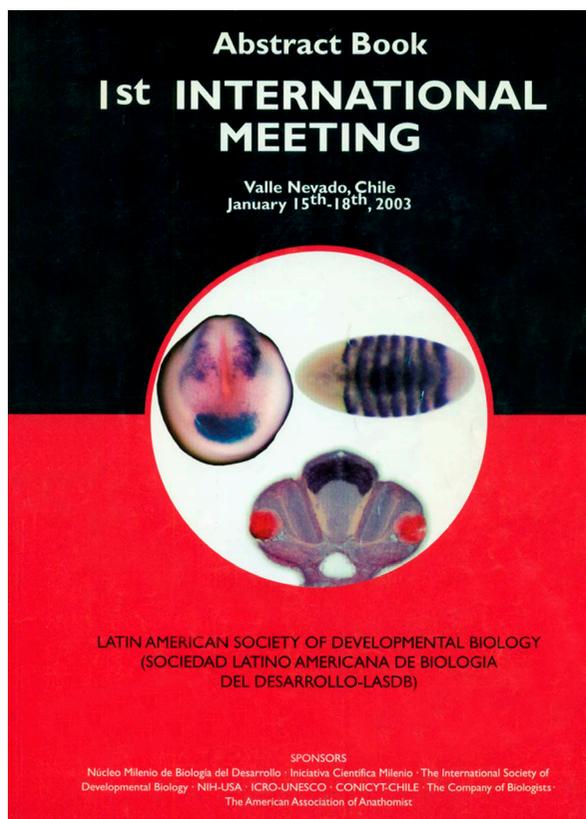


Fig. 1. Abstract book of the first International Meeting of the Latin American Society for Developmental Biology (2003).

highly prestigious scientists working outside the region included Eddy de Robertis, Antonio García-Bellido, Jannet Rossant and Claudio Stern (Fig. 1). This external board has proved central for guaranteeing the participation of scientists from across the globe in the various LASDB congresses. The Valle Nevado meeting was highly successful not only as an extraordinary event but also in terms of the quality of its participants, a characteristic that has prevailed through the following congresses. The opening lecture was given by Sir John B. Gurdon, who in 2012 received the Nobel Prize in Medicine and Physiology. Other leading researchers from the US and Europe, including Ruth Lehmann, Marianne Bronner, Angela Nieto, Eddy de Robertis, Igor B. Dawid, Claudio Stern, Enrique Amaya and Ariel Ruiz I Altaba, among others, gave fascinating talks. Several top scientific researchers from across Latin America also participated. The work presented in Valle Nevado drew on the most powerful techniques in developmental biology employed at the time. For example, the GFP tracking of factors during development and the use of morpholines to knock down genes were discussed in several talks, as well as other techniques that were new at the time, such as global gene expression analysis. This excellent start to the new LASDB society formed robust conditions for further development and consolidation (Fig. 2).

A key feature of the LASDB, is the organization of its biannual congresses in different Latin American countries. The organization of the second meeting was led by Ricardo Ramos and the meeting was held in the city of Guaruya, Brazil in 2005. The meeting was preceded by a satellite course organized by Ruth Lehmann (SDB president at that time), Jose Xavier Neto (university of Sao

Pablo) Ida Chow (SDB) and Roberto Mayor (LASDB president) at the city of Juquehy in the state of Sao Pablo, with the participation of some of the meeting speakers. The opening lecture was delivered by Dr. Eric Weischaus, Nobel Prize winner in Medicine and Physiology 1995, who explained the activation of transcription at the mid-blastula transition in *Drosophila*. Again, the talks given by symposium speakers reflected ground-breaking knowledge in Developmental Biology with the participation of new invited speakers, such as Nadia Rosenthal, Marc Fortini, Didier Stainier and Guillermo Oliver; as well as investigators who had participated in the first meeting, including Ruth Lehmann, Marianne Bronner, Roberto Mayor, Eddy de Robertis, Richard Behringer, and Claudio Stern; and top researchers based in Latin America, such as Eugenia del Pino, Juan Riesgo Escovar, Miguel Allende, Miguel Concha and Juan Larrain. Interestingly, as key areas of research at the time, significant works related to evolutionary developmental biology of non-model organisms, as well as the role of microRNAs in development were presented in Guaruya.

The third LASDB congress was a Pan American congress that took place in Cancun, México, in 2007. This was an experimental event co-organized by the Society of Developmental Biology (SDB) from the US, the LASDB and the Mexican Society for Developmental Biology (SMBD). It is important to mention that the SDB supported the LASDB, allowing the realization of the Pan-American Congress. For the organization of this and following meetings, the experience of Ida Chow, the SDB Executive Director, was highly important. The organizing committee included representatives of each society, such as Gail Martin, and Richard Berhinger for SDB, José Xavier Neto represented the LASDB, and the representatives of the MSBD were Diana Escalante and Mario Zurita. The meeting followed a programme similar to that of the annual SDB meetings, as it included special symposia, such as the presidential symposium opened by Eddy de Robertis, Janet Rossant and Cliff Tabin. This meeting was larger than regular LASDB meetings, with roughly 800 participants. Again, the talks and poster presentations reflected ground-breaking knowledge in Developmental Biology. This first Pan-American meeting of Developmental Biology was highly successful, and several sessions were dedicated to morphogenesis and organogenesis in different model organisms. However, we noticed that the large size of Latin America and associated travel costs, resulted in low participation of students from different Latin American Countries. For instance, the number of students travelling from Argentina and Chile was significantly lower in 2007, as compared to the previous LASDB meetings. This posed a challenge to the LASDB, as it was important to seek alternative avenues to provide student fellowships. During this meeting, Mario Zurita was elected President of the LASDB for the next two years.

Because the Pan-American Congress of Development Biology together with the SDB had involved a large number of participants from the United States since the 2005 meeting, the LASDB decided to hold the fourth international congress in 2008. The congress was organized by a committee led by Pablo Wappner, of the Leloir Institute, in November 2008, and took place in Buenos Aires, Argentina. Before the congress, an extraordinary course co-organized by Ida Chow of the SDB was held at the Leloir Institute on Development Biology, in which some of the speakers of the congress participated, including the Nobel laureate Eric Wieschaus. The high-level course provided training on sophisticated techniques related to, for instance, the generation of transgenic fish and different uses of



Fig. 2. Photograph of the participants at the first congress of the Latin American Society for Developmental Biology (LASDB, 2003). Several of the current members of the LASDB met at that congress for the first time.

confocal microscopy for the study of embryos of different organisms. The Leloir Institute houses good facilities for this type of course, and the course was successful. The conference began with an opening lecture by Eric Weischaus on the developmental pattern of gastrulation in *Drosophila*. This time, in addition to speakers from the United States and Europe, we had guests from Israel, such as Benny Shilo, and from Japan, such as Shigeo Hayashi, along with researchers from across Latin America. Many of the talks of this congress focused on different levels of development that practically covered all animal models from planaria to mammals through *C. elegans*, *Drosophila*, zebrafish, *Xenopus*, chick and mouse. Extraordinary presentations were also given on the development of organisms that are not classical models.

At this point, after four successful congresses held in four different Latin American countries that allowed the interaction of developmental biologists from across region and with colleagues from the United States, Europe and Asia, it could be said that the LASDB was consolidated, and a network of developmental biologists was established that allowed collaboration and exchange of ideas at the international level. Once the LASDB was consolidated, the challenge was then to maintain both the academic calibre of the courses and congresses, and to maintain the level of organizational capacity established since the first congress held in Valle Nevado.

For the fifth meeting, the LASDB returned to Chile in 2010. A new satellite course, organized by Miguel Allende (LASDB), Ida Chow (SDB), Richard Harland (SDB) and Juan Larrain (LASDB), was held at the Faculty of Science of the Pontifical Catholic University of Chile in Santiago, and focused on models of regenerative biology. At the course, students had the opportunity to work with classical models of regenerative biology, such as salamander, axolotl, and hydra, as well as with other organisms, such as fish with regenerative capacities in some of their organs or structures. The LASDB congress was held in the city of Santa Cruz, a small

town with colonial features surrounded by vineyards. Janet Rossant presented the opening talk about stem cells and early development in mammals. On this occasion, plenary presentations were delivered by Allan Spradling, Phil Benfey and Alfonso Martínez Arias. Since the pre-congress course focused on regenerative biology, many of the course professors gave lectures at the congress focused on this subject in relation to different systems. The relaxed atmosphere of Santa Cruz served as a perfect setting for the exchange of ideas and discussion on the different topics addressed at the congress, which again was a highly successful meeting. In this opportunity, Jose Xavier-Neto of the National Laboratory of Biosciences in Sao Paulo, Brazil was named the third LASDB President.

Until this point, the five LASDB congresses had been held in Argentina, Brazil, Chile and Mexico. Therefore, it was important that a different country organized the 6th LASDB congress was held in the city of Montevideo, Uruguay in 2012. Similar to the previous congresses, a pre-congress course was taught at the University of the Republic and at the Pasteur Institute in Uruguay, which was organized by Nibia Berois Domenech and Flavio Zolessi from Montevideo, and Ida Chow and Mike Levine of the SDB. The course focused on the use of systems biology in the study of mechanisms of organismal evolution. The congress was organized by Nibia Berois, María Castello, Milka Radmilovich and Flavio Zolessi. Keynote lectures were given by Nicole Le Dourin, Walter Gehring, Jean David, and Enrique Lessa. As in previous conferences, excellent scientific knowledge was discussed in different areas of developmental biology, focussing this time on the regulatory networks that determine different embryonic stages. Interestingly, although in previous congresses a few presentations focused on plant developmental biology, the Montevideo congress included a considerably number of plant talks. The congress in Montevideo was organized very effectively and clearly serves as an example of collaboration of different Latin American scholars



Fig. 3. The last Latin American Society for Developmental Biology (LASDB) meeting in Buenos Aires, Argentina. **(A)** Congress poster. **(B)** Award of the LASDB prize to Dr. Eugenia del Pino. From left to right: Oscar Pérez, Eddy de Robertis, Eugenia del Pino and Pablo Wappner. **(C)** Founding members of the LASDB, Roberto Mayor, Claudio Stern and Alejandro Sánchez Alvarado with students who participated in the tenth congress.

through the LASDB.

For the next meeting, to be held in 2013, the board of the LASDB decided to embark on an effort of greater proportions, which was to organize a joined congress together with the International Society for Developmental Biology (ISDB), the SDB, and the SMBD. Thus, four different Developmental Biology societies worked together in the organization, which was a not an easy task. This was partly possible due to the efforts of the LASDB external board members, Eddy de Robertis and Claudio Stern, the latter was then president of the ISDB. In addition, the SDB, which has always supported the LASDB, was essential for the organization of this congress. For the SMBD it was an honour to participate and set up the meeting. As one of the advantages of this international congress, different sources of financial support became available. It was decided that the meeting would again be held in the city of Cancun, Mexico, which proved to be a good setting for this type of event. The congress was held from June 16 to 20, 2013, and for its organization, two committees were formed. The first committee was held in charge of logistics and included Ida Chow (SDB), Stefan Schultze-Merker (ISDB) and Mario Zurita (LASDB). The second committee was the Scientific Programme Committee, which included Vivian Irish (SDB President), Claudio Stern (ISDB President), José Xavier Neto (LASDB President), Adriana Garay (SMBD President) and Juan Riesgo Escovar (SMBD). John Gurdon, who had just been awarded the Nobel Prize in Medicine and Physiology in 2012, opened the first plenary session. Several prizes from the different societies were awarded during the congress. The ISDB Harrison Medal was awarded to Janet Rossant, the LASDB Prize was awarded to Roberto Mayor, and several SDB prizes were also awarded, such as the Viktor Hamburger Outstanding Educator Prize to Bill Wood, the Edwin G. Conklin Medal to Marianne Bronner, and the Developmental Biology-SDB Lifetime Achievement Award to John Fallow. In addition, Martin Chalfie, 2008 Nobel Prize in Chemistry winner, gave a Keynote Lecture. Outstanding contributions were also made by several Latin American colleagues such as Javier Palatnick, Juan Larrain, Rosa Navarro and Miguel Concha. In general, this international meeting organized by four different societies was highly successful. However, we learned

several lessons from the experience. It was not easy to agree on an academic programme, since each one of the societies involved had chosen several top-level candidates for the different symposia, and it was not possible to integrate all of them in the congress. On the other hand, to obtain financial support was not difficult as the reputation of the participants made relatively easy to convince foundations of different countries to provide support, including those of the host country. In the end, the congress was a positive experience, with the disadvantage that due to the high costs few Latin American students and researchers were able to participate.

The eighth congress was held in the city of Santos, Brazil in October 2015. A satellite course on the comparative embryology

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- Developmental Plasticity

LECTURERS

- Michel Bagnat (Duke, USA)
- Luisa Cochella (IMP, Austria)
- Federico Ariel (IAL-UNL)
- Graciela Boccaccio (FIL)
- Nora Calcatera (IBR-UNR)
- Juan Fernandino (IIB-INTECH)
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Limited support is available to help students to assist to the course
 The course is organized in coordination with the annual meeting of LASDB, to be held in Buenos Aires after the course

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Fig. 4. Poster of the last satellite course of the Latin American Society for Developmental Biology (LASDB) congress in the city of Rosario, Argentina.

TABLE 1

CHRONOLOGY OF THE LASDB MEETINGS

Meeting	Year	Place	Course	Organizers/Sponsors
1st International Meeting of the LASDB	2003	Valle Nevado, Chile		LASDB/LASDB, ISDB
2nd International Meeting of the LASDB	2005	Guarujá, Brazil	Model Organisms and Innovative Approaches in Developmental Biology	LASDB/LASDB, ISDB, SDB
3rd International Meeting of the LASDB; 1st PanAmerican Meeting in Developmental Biology	2007	Cancún, México		LASDB, SDB, MSDB/ LASDB, SDB, ISDB, MSDB
4th International Meeting of the LASDB	2008	Buenos Aires, Argentina	Frontiers in Developmental Biology: Concepts, Techniques and Model Organisms	LASDB/LASDB, SDB, ISDB
5th International Meeting of the LASDB	2010	Santa Cruz, Chile	Concepts and Model Organisms in Regenerative Biology	LASDB/LASDB, ISDB, SDB
6th International Meeting of the LASDB	2012	Montevideo, Uruguay	A systems Biology Approach to Understanding Mechanisms of Organismal Evolution	LASDB/LASDB, ISDB, SDB
7th International Meeting of the LASDB; 17th International Congress of Developmental Biology 72nd Meeting of the SDB; 11th Congress of the MSDB	2013	Cancún, México		ISDB, SDB, LASDB, MSDB/ ISDB, SDB, LASDB, SMDB
8th International Meeting of the LASDB	2015	Santos, Brazil	Comparative Embryology of Marine Invertebrates	LASDB/LASDB, ISDN, SDB
9th International Meeting of the LASDB	2017	Medellin, Colombia	Current Topics and Emerging Models in Developmental Biology and Comparative Genomics and Transcriptomics in non model species	LASDB/ LASDB, SDB, ISDB
10th International Meeting of the LASDB	2019	Buenos Aires, Argentina	Control Mechanisms of Gene Expression in model organisms	LASDB/LASDB, ISDB, SDB

of marine organisms was also given. The course was organized by the Marine Biology Centre of the University of Sao Paulo. The organization was led by Irene Yan, Jose Xavier-Neto and Nadia Monesi. On this occasion, the talks were organized into sessions of diverse themes. For example, in the first session Javier Palatnik discussed the role of microRNAs in plant development, Eddy de Robertis discussed the Wnt pathway in *Xenopus* and Kathleen Whitlock discussed the development of the nervous system. The sessions covered a wide range of topics and were welcomed and interesting. Three plenary presentations were delivered: the first one by Martin Chalfie, the second one by Maria Leptin who presented the EMBO-MOD lecture, and the third one by Paul Tafforeau (European Synchrotron Radiation Facility, France). In past conferences, talks by young researchers were selected from abstracts. In this congress, however, an exclusive session dedicated to young Latin American researchers was set up, with talks of notably high quality. In this eighth LASDB congress, Pablo Wappner was elected the 4th President of the LASDB.

The 9th LASDB congress was held in 2017 in the city of Medellin, Colombia, a country that had never before organized a LASDB meeting. This highly successful meeting was organized by a committee led by Natalia Pabon-Mora. Marianne Bronner, Alejandro Sanchez-Alvarado, Roberto Mayor, Angela Nieto, Joachim Wittbord, Robert Sablowski and Sir John Gurdon among others delivered keynote lectures. This meeting was characterized by a greater number of plant lectures, which were of very high level, and included shorter talks delivered by students and post-docs. Not only one but two pre-congress courses were organized. One of them focused on emerging models in Developmental Biology, while the other one was on genomics and transcriptomics of non-model organisms. Professors included Enrique Amaya, Brigitte Galiot, Miguel Concha, Federico Brown, Rodrigo Nunes de Fonseca, Jeremiah Smith and Yvan Wenger.

The 10th and latest LASDB congress was held in 2019, and returned to Buenos Aires, Argentina (Fig. 3). The meeting was organized by a committee led by Pablo Wappner, Guillermo Lanuza and Guillermo Oliver, a professor at Northwestern University in Chicago, USA. The LASDB Prize was restored in this meeting (it was awarded only once in 2013 to Roberto Mayor), and in this occasion

the winner was Eugenia del Pino from Ecuador, in recognition of her academic and scientific contributions throughout her career. The congress opened with the ICGEB lecture by Eric Wieschaus on cell signalling in early fly development, and closed with the ISDB-MOD lecture delivered by Claudio Stern on the regulation of embryonic polarity and twinning in vertebrates. The sessions covered diverse topics that included tissue regeneration, cell signalling, organogenesis, pattern formation, neurogenesis, plant development, early animal development and molecular physiology. Alejandro Sanchez-Alvarado, Marianne Bronner, Angela Nieto, and Roberto Mayor, among others, delivered fantastic lectures. Short talks were selected from abstracts, and two-minutes flash talks were also included in the program. This time, a satellite course was organized at the city of Rosario, supported by the International Centre for Genetic Engineering and Biotechnology (ICGEB), and the Organizing Committee was led by Javier Palatnik (Fig. 4). The course focused on mechanisms of regulation of genetic expression during development of model organisms. The course covered state-of-the-art techniques, such as mutagenesis using the CRISPR/Cas9 system. Again, the course and congress were highly successful, and the LASDB board members elected Juan Riesgo Escobar as the 5th president of the Society.

In conclusion, what emerged from informal communications between Roberto Mayor and Eddy de Robertis in 2002 has evolved into an established and consolidated Latin American Society of Developmental Biology. Proof of this evolution is found in the organization of ten high-level international congresses, in which leading researchers from across the region shared experiences and established connections with each other and with colleagues from the rest of the world (a summary of the LASDB meetings is shown in Table 1). Critical to this outcome has been the excellent congresses and courses organized. The LASDB's External Board, composed of leading researchers worldwide has been a determining factor for its success. Likewise, support from the ISDB and SDB has been consistent throughout the years, and accordingly, from its conception, the LASDB has maintained a top-notch scientific standard. We are convinced that the LASDB will continue to be a successful society, forging paths for collaborations between developmental biologists of Latin America and the rest of the world.

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<https://doi.org/10.1387/ijdb.200146sg>

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