

IRB
BARCELONA

INSTITUTE 
FOR RESEARCH
IN BIOMEDICINE

2010
ANNUAL
REPORT
SUMMARY

Welcome to the 2010 Annual Report of
IRB Barcelona. This document provides a
snapshot of our activities for the year.

For a detailed picture, visit the full report online:
www.irbbarcelona.org/annualreport2010



IRB BARCELONA FIVE YEARS ON

Joan J. Guinovart
Director
IRB Barcelona

Joan Massagué
Adjunct Director
IRB Barcelona

In October 2010, IRB Barcelona celebrated its fifth-year anniversary as an independent research institute. Setting up a research center from scratch is no easy task, and in these five short years we have been able to make great strides forward in placing IRB Barcelona on the map in international biomedical research.

The successes we have achieved so far have been made possible only through the hard work and dedication of all members of the IRB Barcelona community. 2010 has been a year of successes and challenges, perhaps best characterized by measured growth, both in the expansion of our

scientific activities, as well as in the addition of research-related programmes and activities in spite of financially trying times.

New additions to the IRB Barcelona community

We are gratified to have been able to expand the IRB Barcelona family in 2010 with the hiring of two new Group Leaders. First, the Oncology Programme welcomed Angel R. Nebreda and his group in July. Angel, previously at the CNIO in Madrid, will focus his research on studying the basic mechanisms of cell regulation, especially regarding how external signals are interpreted by cells to modulate cell proliferation, differentiation and survival. Raúl Mendez, formerly at the CRG in Barcelona, also joined IRB Barcelona, taking up his position of Group Leader in the Molecular Medicine Programme in January 2011. Raúl and his group will continue their work on translational control of cell cycle and differentiation, focusing on the molecular mechanisms that dictate alternative 3' UTR formation and the temporal and spatial translational control of specific mRNAs during cell cycle progression and chromosome segregation, senescence and related conditions. We warmly welcome these new groups and wish them every success with us.



IRB Barcelona's External Advisory Board, a group of 14 leading international researchers who help guide us in shaping our research and related activities, has undergone its first compositional rotation. We would like to express our gratitude to the members who are stepping down for their invaluable contributions at a crucial stage in IRB Barcelona's history to help establish the institute as a dynamic and promising player in international biomedical research. We warmly welcome our new board members: Dario Alessi (University of Dundee), Wil-



liam G. Kaelin (Dana Farber Cancer Institute), Luis Parada (University of Texas Southwestern Medical Center), Dinshaw Patel (Memorial Sloan Kettering Cancer Center), Trudi Schupbach (Princeton University), and Giulio Superti-Furga (CeMM Research Center for Molecular Medicine), and look forward to sharing our goals and plans with them and to benefiting from their valuable expertise. We look forward to the first gathering of this new group, at the next meeting of the External Advisory Board, which is scheduled for November 2011.

Training the scientific leaders of the future

Training activities continued to provide plenty of opportunity at IRB Barcelona. September saw the addition of ten new students who joined the IRB Barcelona/“La Caixa” International PhD Programme. The students, who come from seven different countries, will spend the next four years doing research toward their doctoral degrees in an IRB Barcelona group. Several more students were also able to begin their studies at IRB Barcelona through a second national-level call, as well as through other opportunities.

The student community continues to be busy with a range of initiatives, including student seminars, “cool-off sessions”, a football league, all aimed at creating possibilities for scientific and social interaction among their community. In addition to their studies in the lab, some of our students are currently hard at work organizing the second IRB Barcelona PhD Student Symposium, “Life in motion: Dynamics of molecules and systems”, which will take place on November 17-18, 2011 at the Barcelona Aquarium. This activity represents a valuable opportunity for our younger colleagues to get some hands-on experience in areas that will serve them well in their future careers.



In 2010, IRB Barcelona was awarded a substantial grant from the EU's Marie Curie Programme to give a boost to postdoctoral training at the institute. A total of 18 two-year fellowships will be available through the programme, which aims to promote mobility and interdisciplinary research of excellence. The calls, the first of which to be launched in 2011 will offer 8 fellowships, followed by a further 10 in a second call in 2013, are open to talented scientists from around the world.

In addition to its formal training programme, in 2010 IRB Barcelona continued to expand its

research-related training activities. A range of technical courses, including workshops on imaging and genome data analysis and bioinformatics were offered as well as training in "soft-skills", such as media training and scientific writing. The annual Career Progression in Science event, held in June in collaboration with the PCB, once again offered young researchers a valuable opportunity to gain inspiration and insight into alternative careers in science.

The Barcelona BioMed Conference series, organized in conjunction with the BBVA Foundation

continued to go from strength to strength with the celebration of three events in 2010: “Intrinsically Disordered Proteins in Biomedicine”, organized by Miquel Pons and Pau Bernadó from IRB Barcelona and Peter Wright from the Scripps Research Institute; “Macrophages and Inflammation”, organized by Antonio Celada from IRB Barcelona and Aberto Mantovani from Instituto Clinico Humanitas-IRCCS and the University of Milan; and “Cancer Metabolism”, organized by Joan Guinovart and Dario Alessi from the University of Dundee. The series has continued to deliver exceptional line-ups of speakers on different themes in the biomedical sciences, and the conferences have been consistently oversubscribed. The series has also achieved recognition among editors from the major scientific journals, who consistently attend the events.

Challenges and opportunities that lie ahead

In 2010 there have also been challenges. Chief among these has been the need to carefully navigate the financially difficult times we are experiencing in a time of recession and the unfavourable impact of these developments on the government’s budget allocated to research centers. Mercifully, the budgetary restrictions have translated into a curving of the

institute’s growth rate and not into budget cuts that have constrained our research activities.

IRB Barcelona continues solidly down its path of establishing itself as an international center of excellence in biomedical research. Our achievements so far in recruiting top-level scientists, in establishing a respectable standard of publication, in securing competitive funding, in creating the infrastructure and activities necessary to facilitate excellence in our scientific and training endeavours, and in establishing strategic and fruitful collaborations, are a clear testament to the hard work and dedication of the entire community.

The main priority for IRB Barcelona in 2011 will undoubtedly be to consolidate our activities and ensure that we are making the most efficient use of resources available to us in order to build on the level of excellence and competitiveness we have achieved so far in our scientific and research-related activities.

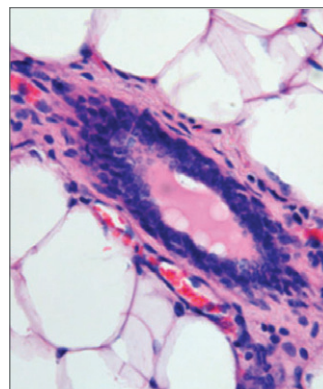
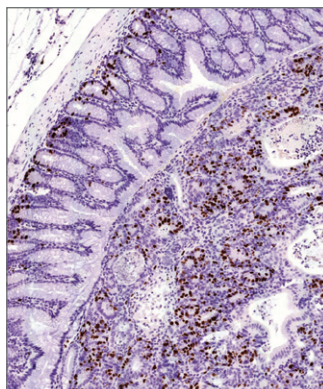
We would like to take this opportunity once again to express our appreciation for the commitment and efforts made by members of the IRB Barcelona community. As always, we look forward to your continued enthusiasm and energy to meet the challenges and opportunities that lie ahead, under the guidance of IRB Barcelona’s Board of Trustees. ■

SCIENTIFIC HIGHLIGHTS

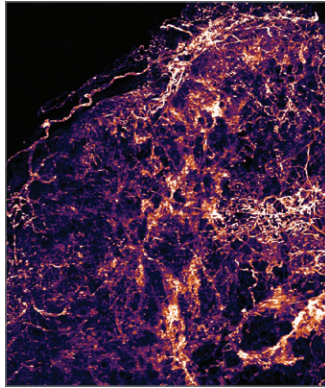
FOLLOWING THE SIGNALS OF CELLS: ANGEL R. NEBREDÁ

Biochemist and new IRB Barcelona group leader Angel R. Nebreda has lived most of his research life as an expatriate, spending many years at the National Institutes of Health (US), Cancer Research UK and the European Molecular Biology Laboratory (Germany).

Ready to move back to Spain, in 2004 he took up a position at the Spanish National Cancer Center in Madrid. In July 2010, he joined IRB Barcelona to run the Signalling and Cell Cycle Laboratory. At IRB Barcelona, his research will mainly focus on unraveling the role of the protein kinase p38 MAPK in breast, colon and lung cancers, exploring the rewiring of tumor cells, and finding connections between inflammation and tumors. ■



TAKING A CLOSER LOOK: JULIEN COLOMBELLI



One of the easiest ways to understand something is to see it. In biology, direct observation has indeed long been one of the most effective ways to study living organisms.

One of the major challenges – and great opportunities - in biomedical sciences is being able to get a good look at complex biological processes normally unseen to the naked eye.

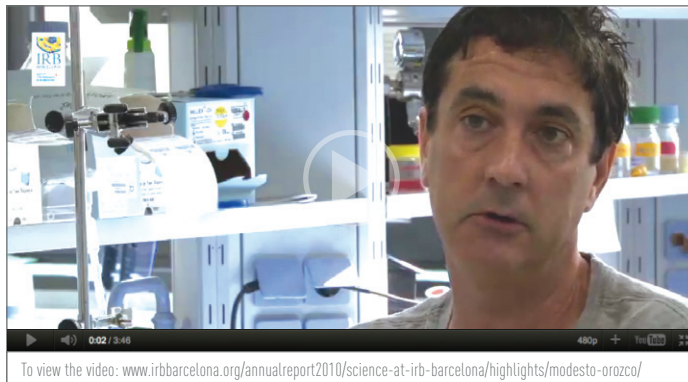
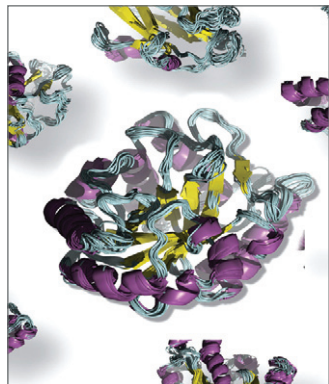
Advances in microscopy and imaging technologies over the years have made the unseeable seeable and have afforded rare glimpses of how molecules and cells behave *in vitro* and *in vivo*, helping researchers to understand how organisms function.

Julien Colombelli, a physicist from France, arrived at IRB Barcelona in 2008 with the ambitious goal of setting up one of Spain's most cutting-edge facilities for Advanced Digital Microscopy.

Two years later, the facility has amassed a complete range of imaging technologies, ranging from confocal and conventional fluorescence microscopy to such innovative technologies as multiphoton imaging, spinning disk confocal and laser manipulation.

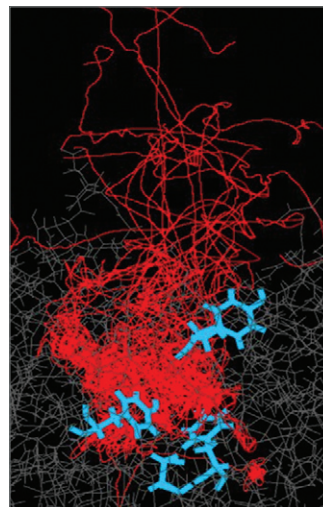
The facility has helped arm the Institute's researchers with valuable tools that will bring unprecedented insight into many biological processes involved in health and disease. ■

A MODEL UNDERTAKING: MODESTO OROZCO

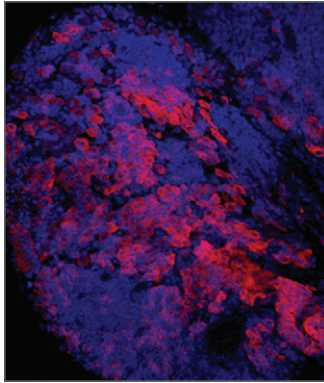


When it comes to developing effective drugs, one of the major stumbling blocks has been the fact that scientists have had to design pharmaceutical agents as if the molecules against which they are to act are static – a very unrealistic scenario. Proteins are dynamic and constantly in motion, making it difficult for scientists to pinpoint the structural conformation of target molecules.

Thanks to the work of computational scientists led by IRB Barcelona's Modesto Orozco, and in collaboration with the Barcelona Supercomputing Center, pharmaceutical companies now have a valuable new tool at hand. MoDEL, which stands for Molecular Dynamics Extended Library, is a database containing trajectories of more than 1700 proteins – all of which are in motion. In 2010, the database – the largest of its kind in the world – went live, and aims to revolutionize the work of basic researchers and drug designers across the globe. ■



OFF TO A FLYING START: ANA JANIC



Little did Ana Janic know when she started her PhD studies at IRB Barcelona five years ago, that her work on tumor development in the fruit fly would end up earning her a coveted first-author paper in *Science* magazine.

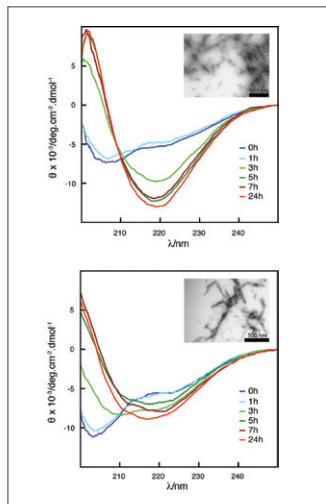
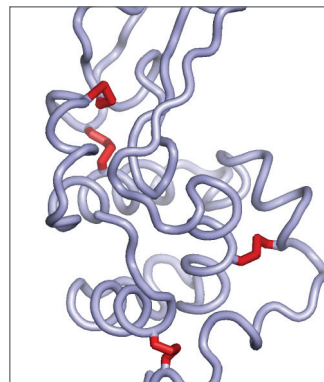
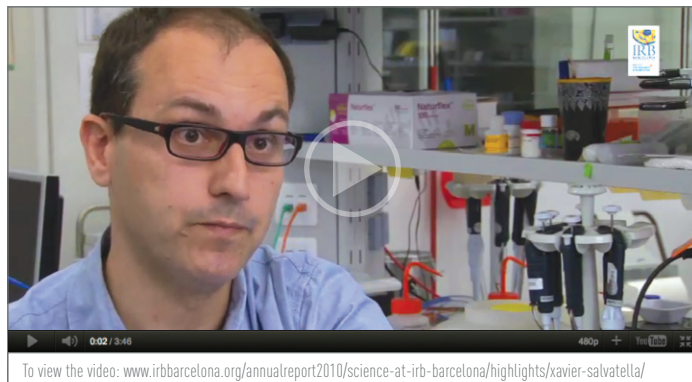
Her findings, obtained in Cayetano González's Cell Division Laboratory, showed that tumor cells mimic the genetic programme of germline cells (such as genes specific for testis or ova-

ry development). Researchers discovered that removal of some of these genes leads to normal (wild-type) brains.



Their finding demonstrates that these genes are crucial for tumor growth. Upon finishing University in her native Serbia, Ana opted to spend a summer as a student intern at IRB Barcelona, which convinced her to take up a PhD studies in cancer research. Her adventures in science will soon lead her to Australia, where she will take up a postdoctoral position at the prestigious Walter and Eliza Hall Institute of Medical Research. ■

A NEW HANDLE ON KENNEDY'S DISEASE: XAVIER SALVATELLA



Kennedy's disease is a rare inherited disorder that affects men only, and causes progressive muscle weakness and atrophy throughout the body.

Just like Alzheimer's and Parkinson's, Kennedy's disease has its origin in the development of protein aggregates, which can accumulate in motor neurons, the cells in charge of contracting muscles to produce movement.

IRB Barcelona group leader Xavier Salvatella, who specializes in understanding the molecular and biochemical processes behind protein aggregation, has embarked on a new international collaborative effort, funded by the La Marató de TV3 Foundation, to take a deeper look at the role of androgen receptor protein aggregates in this devastating disease – with the hope of eventually finding a cure. ■

FACTS AND FIGURES

- In 2010, IRB Barcelona included **469 members** working in **27 research groups** spread across **5 interdisciplinary scientific programmes** and **6 core facilities**, plus administrative and support staff.
- **43% of PhD students** and **50% of postdoctoral fellows** were non-Spanish nationals.
- IRB Barcelona researchers **published a total of 158 papers** in peer-reviewed journals in 2010.
- IRB Barcelona researchers participated in a total of **147 national and international research projects and networks** in 2010.
- Funding obtained by IRB Barcelona researchers through grants, networks and personnel grants in 2010 amounted to **€11,272,304**.



Credits

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