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FUNDAÇÃO CALOUSTE GULBENKIAN

BOARD OF ADMINISTRATION

The Fundação Calouste Gulbenkian, established by Calouste Sarkis Gulbenkian by his Will dated June 18, 1953, is a private Institution of general public utility, endowed with legal personality. The aims of the Foundation are charity, art, education and science. The members of the Board of Administration in 2006 were:

President

Emílio Rui Vilar

Honorary President

Mikhael Essayan

Executive Trustees

Diogo de Lucena

Isabel Mota

Eduardo Marçal Grilo

Teresa Gouveia

Martin Essayan

Non-Executive Trustees

André Gonçalves Pereira

Eduardo Lourenço

Artur Santos Silva

INSTITUTO GULBENKIAN DE CIÊNCIA

BOARD OF DIRECTORS

The Board of Directors for the Instituto Gulbenkian de Ciência (IGC) ensures that the activities at the Institute follow the guidelines and objectives defined by the Board of Administration of the Fundação Calouste Gulbenkian. The members of the Board of Directors for 2006 were:

Board of Directors

Diogo de Lucena (Chairman)

João Caraça

Manuel Rodrigues Gomes

Manuel Carmelo Rosa

António Coutinho

SCIENTIFIC ADVISORY BOARD

The Scientific Advisory Board of the IGC scrutinises the scientific progress and teaching programmes, as well as the recruitment and activity of personnel and research groups. The Scientific Advisory Board also advises the Board of Administration of the Fundação Calouste Gulbenkian on all matters relevant to the mission of the Institute. The members of the Scientific Advisory Board for 2006 were:

Prof. Sydney Brenner (Chairman)
Prof. Philippe Kourilsky
Prof. Nicole Le Douarin
Prof. Martin Raff
Prof. Kai Simons
Prof. Susumu Tonegawa
Prof. Lewis Wolpert
Prof. Jonathan Howard

The Scientific Advisory Board met at the IGC on 3-5 May 2006.

STAFF

DIRECTOR

António Coutinho

DEPUTY-DIRECTORS

Sérgio Gulbenkian

José Mário Leite

RESEARCH Members

The IGC is not divided into departments, and its scientific activities are organised in relatively small groups. Research is autonomously conducted by individual scientists and small groups who are free to associate in projects.

It should be noted that nearly all the scientists at the IGC are affiliated at other institutions or supported by national or international organisations; these are indicated in parenthesis. Some of those listed below were present at the IGC for only part of the year.

Alessandro Ramos (FCT)	Cristina Casalou (IPO/FCT)
Alexis Gonzalez (FCG) - left November 2006	Cristina João (FCT/Associação Portuguesa contra a Leucemia)
Álvaro Augusto Tavares (ISTUTL)	Dan Holmberg (Univ. Umea)
Ana Catarina Certal (FCT)	Domingos Henrique (IMM/FMUL)
Ana Catarina Sarzedas (IMM/EMBO)	Dulce Azevedo (IMM/FCT)
Ana Cristina Borges (FMVUTL/FCT)	Élio Sucena (FCUL/FCT)
Ana Cristina Paulo (EU)	Elisabetta Padovan (FMUL)
Ana Elisabete Pires (FCT)	Elsa Abranches (IMM/FCT)
Ana Margarida Ferreira (FCT)	Elsa Seixas (FCT)
Ana Margarida Vigário (Univ. Madeira/FCT)	Erwan Michard (FCT)
Ana Maria Pamplona (IMM/FCT)	Fernanda Bajanca (Univ. Minho/FCT)
Ana Sofia Cachaço (IPO/FCT)	Filipa Alves (FCT)
Ana Teresa Tavares (FCT)	Florence Janody (FCT)
Andrea Gomes (IMM/FCT)	Francisco Dionísio (FCUL/FCT)
Andrew Waters (Univ. Leiden)	Frank Hilker (EU)
António Coutinho (CNRS/FCG)	Gabriel G. Martins (FCUL/FCT)
António Freitas Duarte (FMVUTL)	Gabriela Gomes (EU)
António Jacinto (IMM)	Gabriela Rodrigues (FCUL)
Astrid Vicente (INSARJ)	Gabriela Silva (FCT)
Carla Real (IPO/FCT)	Greg King (FCUL/FCG/EC)
Carlos Alberto Ferreira (HUSM)	Guilherme Gonçalves (Ministério da Saúde) - left September 2006
Carlos Penha Gonçalves (Laboratório Associado)	Helena Soares (ESTSL)
Christophe Gregoire (FCT) - left December 2006	Henrique Teotonio (Laboratório Associado)
Clara Reis (Association for International Cancer Research)	Iris Caramalho (FCT) - left March 2006
Claudia Florindo (FCT)	Isabel Alcobia (IMM/FCT)
Cláudia Valente (IMM/FCT)	Isabel Campos (IMM/FCT)
Claúdio Marinho (CAPES)	Isabel Gordo (FCT)
Constantin Fesel (FCT)	Isabel Pombo Gregoire (FCT)

Jacinta Serpa (IPO/FCT)
 Jean-Baptiste André (EU)
 João Pedro Simas (IMM/FMUL)
 Joaquin Rodriguez Leon (CMBR)
 Jocelyne Demengeot (FCG)
 Johann Truccolo (FCT)
 Jorg Becker (FCT)
 Jorge Carneiro (Laboratório Associado)
 José A. Feijó (FCUL)
 José António Belo (Univ. Algarve)
 José B. Pereira-Leal (Laboratório Associado)
 José David-Ferreira (FMUL/IGC)
 Jose Faro (Univ. Vigo)
 Karina Bivar Xavier (Laboratório Associado)
 Leonor Parreira (IMM/FMUL)
 Leonor Sarmiento (FCT)
 Leonor Saúde (FCT)
 Lisete Fernandes (ESTSL)
 Lounes Chiki (IGC)
 Lucia Mentelova (RTMN Fellowship)
 Luís Graca (IMM/FMUL)
 Luís Rocha (Univ. Indiana)
 Luís Rosário (IGC)
 Luisa Mota-Vieira (HDES)
 Madalena Martins (INSA/FCT)
 Manuel Rebelo (IGC)
 Maria de Jesus Trovoada (FCT)
 Maria Margarida Souto Carneiro (FCT)
 Maria Mota (IMM/FMUL)
 Maria Teresa Faria Pais (FCT)
 Marie-France Sagot (Inria Rhone-Alpes, Univ. Claude Bernard, Lyon I)
 Marie-Louise Bergman (FCT)
 Marion Muehlen (EU)
 Marta Barreto (INSA/FCT)
 Marta Miranda (IMM/FCT)
 Marta Moita (FCT)
 Matthias Haury (FCG/EMBL)
 Melvin Cohn (Salk Institute)
 Michael Parkhouse (IGC)
 Michal Michal-Bejerano Sagie (IGC)
 Miguel Godinho Ferreira (FCT)
 Miguel Prudêncio (IMM/EU)
 Miguel Seabra (Imperial College School of Medicine/IGC)
 Miguel Soares (Laboratório Associado)
 Moisés Mallo (Laboratório Associado)
 Mónica Bettencourt-Dias (FCT)
 Natalia Mantilla-Beniens (EU)
 Natalia Moncaut (FCT)
 Nico Stollenwerk (EU)
 Nuno Afonso (FCT)
 Paula Duque (FCT)
 Paula Parra Bueno (FCT)
 Pierre-André Cazenave (Institut Pasteur)
 Rasmus Larsen (FCT)
 Ricardo Gil da Costa (IGC)
 Ricardo Pimenta-Araújo (FMUL)
 Rosa Elias (CAPES/IGC)
 Rosalina Fonseca (Hospital Júlio de Matos/FCT)
 Rui Costa (Laboratory for Integrative Neuroscience)
 Rui Gardner (FCT)
 Rui Gonçalo Martinho (FCT)
 Sabrina Epiphany (IMM/FCT)
 Salvatore Valitutti (INSERM/Inst. Claude Prével, CHU Purpan, Univ.Toulouse)
 Sara Magalhães (Marie-Curie reintegration grant/Grices/FCT)
 Sergio Dias (IPO)
 Sérgio Gulbenkian (FCG)
 Sheila Vidal (IGC)
 Sofia Marques (IMM/FCT)
 Sofia Nolasco (FCT)
 Sofia Oliveira (FCT)
 Sólvieg Thorsteinsdóttir (FCUL)
 Sukalyan Chatterjee (FCG)
 Susana Lopes (FCT)
 Sylviane Pied (INSERM/Institut Pasteur)
 Tatiana Vassilevskaia (EMMA)
 Vanessa Oliveira (IMM/FCT)
 Vera Teixeira (FCT)
 Victoria Gallego (FCT)
 William Wood (IMM/FCT)
 Youri Chanseaud (FCT)

PhD Students

PDIGC PhD Programme

Ana Cecília Seixas (FCUL/FCT)
Ana Cristina Silva (FCUL/FCT)
Ana Luísa Reis (FMVUTL/FCT)
Ana Margarida Coutinho (INSA/FCUL/FCT) - grad. Oct 2006
Ana Margarida Prado (FCUL/FCT) - grad. September 2006
Ana Maria Vieira (FCUL/FCT) - graduated October 2006
Ana Paula Elias (FCUL/FCT)
Ana Rita França (FMUL/FCT)
Ana Rita Marques (ITQB/UNL/Marie Curie Grant)
Ana Sofia Veloso (ITQB/UNL/FCT)
Andreia Cunha (ITQB/UNL/FCT)
Ângelo Chora (FMUL/FCT)
Catarina Figueiredo (ITQB/UNL/FCT)
Catarina Sim-Sim Pereira (ITQB/UNL/FCT)
Catia Igreja (FCUL/FCT)
Célia Domingues (FCUL/FCT) - graduated April 2006
Dinis Gökyaydin (EU) - left October 2006
Dinis P. Calado (FMUL/FCT) - graduated November 2006
Dusan Djokovic (FMVUTL/FMUL/FCT)
Fátima Pereira (ISTUTL/FCT)
Filipa Moraes (ITQB/UNL/FCT)
Helena Costa (ITQB/UNL/FCT)
Hugo Almeida (Association for International Cancer Research)
Ines Matos (FMUL/FCT)
Jaime Combadão (ITQB/UNL/FCT)
Joana Corte-Real (ITQB/UNL/FCT)
Joana Duarte (IMM/FCT)
Joana Monteiro (FCUL/FCT)
Joana Moreira (FCUL/FCT)
Joana Rodo (ITQB/UNL/FCT)
João Duarte (FCTUC/FCT)
João Gonçalves (FCUL/FCT)
Lígia Gonçalves Deus (ITQB/UNL/FCT)
Lília Perfeito (ITQB/UNL/FCT)
Loïc Lhopitallier (EU) - left October 2006
Mafalda Silva (ITQB/UNL/FCT)
Margarida Santos (FMUL/FCT)
Maria do Rosário Sambo (FMUL/Hosp. Pediátrico Luanda)
Maria Francisca Moraes Fontes (FMUL/Hosp. Egas Moniz/Min.Saúde)
Mariana Faria (FCUL/FCT) - graduated May 2006
Mário Grãos (FCUL/FCT)
Mário Rui Filipe (FCT/UNL/FCT)
Mark Seldon (ICBAS/FCT) - graduated December 2006
Marta Campos (IMM/FCT)
Marta Carapuço (ITQB/UNL/FCT)
Marta Guimarães (ITQB/UNL/FCT)
Nadja Pejanovic (ITQB/UNL/FCT)
Nuno Moreno (FCG/FCUL)
Nuno Sepúlveda (ICBAS/FCT)
Patrícia Simões (IEFP)
Paula Rodrigues (FCUL/UNL/FCT)
Paulo Alves (FMUL/FCT) - graduated April 2006
Pedro Rifes (FCUL/EU Network of Excellence)
Raquel Antunes (ITQB/UNL/FCT)
Raquel Carvalho (ITQB/UNL/IEFP)
Raquel Lourenço (ITQB/UNL/FCT)
Ricardo Águas (ITQB/UNL/FCT)
Rita Neres (ITQB/UNL/FCT)
Rita Rasteiro (ITQB/UNL/FCT)
Ruben Ramalho (ITQB/UNL/FCT)
Rute Nascimento (ITQB/UNL/FCT)
Sander van Noort (ITQB/UNL/EC)
Santiago Zelenay (FCUL/FCT)
Sara Carvalho (ITQB/UNL/IGC)
Sílvia Costa (FCUL/FCT)
Sílvia Cristina de Paiva e Almeida (FMUL/Wellcome Trust Grant)
Sílvia Maurício Correia (ITQB/UNL/FCT)
Sofia Carvalho (ITQB/UNL/Marie-Curie)
Sofia Cordeiro (FCUL/FCT)
Sofia Rodrigues (ECSUM/FCT) - graduated July 2006
Susana Godinho (IST/FCT) - graduated January 2006
Tânia Vinagre (ITQB/UNL/FCT)
Tiago Krug (FMUL/FCT)
Tiago Paixão (ICBAS/FCT)
Vasco Correia (ICBAS/FCT)
Vitor Conde Sousa (FCUL/FCT)
Zita Santos (ITQB/UNL/FCT)

Other PhD Students

Alexandre Trindade (FMVUTL/FCT)	Marija Spasikova (PGDB/ITQB/UNL/FCT)
Ana Lucia Mena (PGDB/ITQB/UNL/FCT)	Marta Alenquer (IMM/FCT)
Ana Rodrigues-Martins (University of Cambridge/FCT)	Marta Vitorino (UAIg/FCT)
Beatriz Garcia Fernandez (IMM/ITQB/UNL/FP6)	Patricia Leirião (IMM/IHMTUNL/FCT)
Bruno Douradinha (IMM/FCT)	Rita Fior (IMM/FCT)
Catarina Correia (INSA/FCUL/FCT)	Rita Fragoso (IPO/FCUL/FCT)
Cristina Rodrigues (IMM/FCUL/FCT)	Rui Benedito (FMVUTL/FCT)
Emiliano Barreto Hernandez (FCUL/EU)	Sérgio Simões (IMM/FCUL/FCT)
Filipa Lopes (IMM/FCT)	Sílvia Portugal (IMM/FCT)
Filipe Vilas-Boas (IMM/FCT)	Sónia Albuquerque (IMM/ICBAS/FCT)
Francisco Caiado (IMM/FCT)	Sónia Ventura (FMVUTL/IBET/FCT)
Jennifer Geiger (IMM/FP6)	Susana Rocha (IMM/FCT)
Lazlo Tokaji (PGDB/ITQB/UNL/FCT)	Vivian Leite de Oliveira (PGDB/ITQB/UNL/FCT)
Lénia Rodrigues (IMM/FCT)	
Lisa Gonçalves (UAIg/FCT)	
Luciana Ferrari (Federal University of Rio de Janeiro/CAPES)	
Margarida Cunha-Rodrigues (IMM/FCT)	
Mariana Simões (IMM/IEFP/FCT)	

PhD Programme in Computational Biology 2006

Ana Paula Santos Botelho Oliveira Leite	Márcio Duarte Albasini Mourão
Bruno Emanuel Ferreira de Sousa Correia	Nuno Miguel Dias Mendes
Guilhermina Isabel dos Santos Duarte	Pedro Tiago Gonçalves Monteiro
Jacinto José Fonseca Pereira	Ramiro Emanuel Magno Morgado
Liliana da Conceição Monteiro Salvador	Rogério Paulo Pelaio Candeias
Luís Filipe Domingos Pereira de Figueiredo	Sara Vieira da Silva

BSc Students

Ana Catarina Ribeiro (FCUL)	Nuno Morgado (Univ. Évora)
Ana Margarida Santos (FCUL)	Patrícia Lopes (FMVUTL)
Célia Ferreira (Univ. Évora)	Pedro Dias (FCUL)
Frederico Rodrigues (FCUL/IEFP)	Pedro Ferreira (Univ. Lusófona)
Gaspar Pedro Miguel (FCUL)	Pedro Sanches (ISTUTL)
Hugo Soares (Univ. Coimbra)	Raquel Mendes (Univ. Lusófona)
Inês Pereira (FMUL)	Rita Amândio (FCUL)
Isabel Belo (Univ. Évora)	Rui Buzaco (Univ. Évora)
Lara Santos (Univ. Lusófona)	Sandra Trindade (Univ. Évora)
Maria João Lagareiro (Univ. Évora)	Teresa Barrio (INSA/FCUL)
Nuno Miguel Ribeiro Palha (FCUL)	Teresa Cruto (FCUL)

Laboratory Technical Support

Alexandra Duarte (Short Term Apprentice)
Alexandre Rodrigues (IEFP)
Ana Água-Doce (IMM/BTI/FCT)
Ana Catarina Correia (BIC/FCT)
Ana Catarina Silva (BIC/FCT)
Ana Gaspar (FCUL/EU Network of Excellence)
Ana Nóvoa (Laboratório Associado)
Ana Salgueiro (UALG/BI/FCT)
Ana Sofia Leocádio (BTI/IGC/FCG)
Ana Sofia Oliveira (BTI/IGC/FCG)
Ana Sofia Oliveira (IEFP)
Benedita Fonseca (Marie Curie/IEFP)
Bruno Raposo (Short Term Apprentice)
Carla Fernandes (BTI/IGC/FCG)
Carla Milagre (IEFP)
Claudia Ferreira (IGC)
Cláudia Marques (BIC/FCT)
David Félix (IEFP)
Diogo Manoel (BTI/FCT) - left December 2006
Dolores Bonaparte (BTI/FCG)
Duarte Viana (BIC/FCT)
Elsa Guilherme (IEFP)
Gabriela Gomes (BIC/FCT)
Inês Rolim (FCT)
Íris Vilares (IEFP)
Joana Bom (FCT)
João Alpedrinha (IEFP)
João Dias (Short Term Apprentice) - left to PDBC
João Garcia (BTI/IGC/FCG)
Judite Dias (UALG/IEFP)
Julien Vezillier (Short-term apprentice)
Lara Carvalho (BTI/IGC/FCG)
Lara Lourenço (INSA/IEFP) - left December 2006
Luiz Fernando Goulart (FCT)
Lurdes Duarte (IEFP)
Maíra Aguiar (EC)
Margaret Bento (UALG/BI/FCT)
Maria do Céu Conceição (BTI/IGC/FCG) - left Dec. 2006
Maria Helena Soares (BIC/FCT)
Mariana Silva (IEFP)
Marisa Pardal (BTI/IGC/FCG)
Martina Bradic (BTI/FCT)
Miguel Coelho (Short Term Apprentice)
Natacha Marreiros (BTI/FCT)
Natacha Sousa (IGC/FCG)
Nicolau Ferreira (IEFP)
Nuno Carmo (Short-term apprentice)
Patrícia Rodrigues (FMVUTL)
Paulo Almeida (Laboratório Associado)
Paulo Bettencourt (BTI/IGC/FCG)
Pedro Campinho (FCT) - left in October 2006
Renato Colaço (IPJ)
Ricardo de Souza e Paiva (IEFP)
Rui Martins (IEFP)
Rui Tostões (IEFP)
Sandra Trindade (IEFP)
Sara Ferreira (IMM)
Sara Marques (UALG/BI/FCT)
Sara Sousa (IEFP)
Sara Violante (IEFP)
Sílvia Batista (Short Term Apprentice)
Silvia Cardoso (Phillip Morris)
Sofia Andrade (UALG/BI/FCT)
Sofia Branquinho Rebelo (Astrazeneca)
Sofia Simões (BTI/IGC/FCG)
Teresa Maia (IEFP) - left December 2006
Yara Reis (Short Term Apprentice)

Others

António Cidadão (IMM/FMUL/Associate Professor)
Ines Nisa Rato (Ectopia)
João Pita Costa (Science Communication/FCG/POSC)
José Lourenço (Informatics Technician/FCT)
Kirsten Schmitz (Visiting student/Univ. Osnabrueck, Germany)
Maria Manuela Lopes (Ectopia)
Marta Caridade (IMM/FCUL/Visiting Scientist)
Marta de Menezes (Ectopia)
Marta Lopes (Min. Saúde/Visiting Scientist)
Paula Macedo (Administrative Personnel/EC)
Rita Cachao (Ectopia)
Rita Salles Caldeira (Science Communication/FCG/POSC)
Tânia Cabrito (Visiting Student)
Vitor Faustino (Science Communication/FCT)

ADMINISTRATIVE, SECRETARIAL AND TECHNICAL STAFF

The administrative, secretarial, and technical staff of the IGC provide support to the research and teaching activities. Everyone here worked at the IGC for all or part of 2006.

Administrative and Secretarial Staff

Manuel Carvalho
Manuela Cordeiro
Jorge Costa
Greta Martins
Fátima Mateus
Maria Matoso
Ana Carolina Maya
Margarida Meira
João Nunes
Ana Lícia Pires
Ana Maria Santos
Vítor Santos
Abílio Simões
Teresa Maria Sousa

Laboratory Technical Staff

Ana Cristina Leitão Homem
Júlia Lobato
Isabel Marques
Nuno Moreno
Rosa Maria Santos

Technical Support Staff

António C. Ligeiro
João Carlos Lopes
Severino Matias (left December 2006)
Carlos Nunes
António Sousa
Vítor Varão

UNITS AND SERVICES

The IGC has set up and runs a series of differentiated Services and research-supporting Units that are manned, operated and financed under institutional responsibility. These Services and Units provide regular scientific and technological expertise and advice, as well as personnel support, to the researchers at the IGC and elsewhere in the campus, while open to others in Portugal and abroad.

Animal Facility: Jocelyne Demengeot

Bioinformatics: Pedro Fernandes

Cell Imaging: José Feijo

Histology and Histopathology: Sérgio Gulbenkian/Miguel Soares

Informatics: João Tiago Sousa

Library and Scientific Information: Sérgio Gulbenkian

Science and Society: Sofia Cordeiro

Sequencing and Genotyping: Carlos Penha-Gonçalves

Theoretical and Computational Biology: Jorge Carneiro

Transgenic Unit: Moises Mallo

Zebrafish Facility: Leonor Saúde

The activity in all Units and Services is accompanied and adjusted to current needs by Users Committees that include a good fraction of all scientists of the Institute.

INTRODUCTION

This is the eighth Annual Report I write on the activity at the Instituto Gulbenkian de Ciência, and what a long way the Institute has gone from the very first. Embodying the policies of the Fundação Calouste Gulbenkian, nearly 1,000 people have worked here, bringing IGC's research and education in biomedical sciences second to no other in Portugal. Some 600 students entered science at the Institute, over 350 of which to prepare a doctoral degree. Close to 3,000 scientists from all over the world have visited the Institute to either teach or exchange results and ideas in research seminars and some 100 workshops and courses organized here. More than 50 scientists, Portuguese and foreigner, mostly young and often inexperienced, came from abroad to set up their laboratories at the IGC, having the opportunity to prove their competence as independent leaders. Many of these did so well that they have now gone further to move the groups they had established at the IGC to other institutions, Portuguese most often. All in all, it would seem that the investments of the Foundation, aimed at revitalizing the Portuguese biomedical research community have fructified all over the country. Many an effort was made as well to bring medicine closer to its modern scientific basis, promoting science education to MDs and their direct engagement in research projects. Medicine is rapidly evolving as a technology, from the empirical basis it has had since its inception, to a scientific basis. Today's medicine is either "biomedicine" (biology-based) or is not modern, and it is also the responsibility of scientists to help public and private authorities promoting this critical evolution for the quality of the health system.

These primary concerns occupied most of our attention and resources, but they did not deviate us entirely from producing competitive research: among all Portuguese institutions in life sciences and biomedical research, the IGC has the best record of international impact of its scientific publications over the last 6 years. Clearly, however, research at the IGC has not reached the level of the best European institutions. Considering these results together with the very significant progress of biomedical research and the strengthening of several other institutions in Portugal, it is perhaps appropriate for the Foundation to initiate a reflection on the possibility of updating priorities for the missions of the Institute.

At the IGC, 2006 was a great year, marked by the arrival and installation of 7 new research groups, corresponding to both turnover and a small increase in the size of our operation. The life and intellectual atmosphere at the Institute have thus been significantly enriched with new people, novel visions of the world, additional scientific concerns, questions and approaches, unexplored possibilities for interaction and cooperation. If this rate of turnover implies a heavier toll for all those who must ensure the logistics at the Institute, this is very largely rewarded by the joy of witnessing the growth of the new groups and their progressive affirmation in the scientific community. Their enthusiasm contributes much of the excitement and "freshness" that characterizes the IGC's institutional life, and we are all very grateful to them. The net gain was enormous, all the more so as we were fortunate enough to maintain close collaborations with most of the groups who left to new responsibilities in Portugal and abroad. Thus, many of the outgoing groups find it useful to adopt a status of "external", associated IGC

members, such that the number of IGC groups continues to increase, and the Institute is on the way to acquire an existence that might dispense of walls, facilities and administration, to become a body of scientists who have shared a personal history in Oeiras, but also values, attitudes, and the common objective of pursuing excellence and cooperativity in science. There are many an example already that this “level of organization” brings about the emergence of new, distributed properties of the whole group, including mutual stimulation and support, which result in common initiatives directed at improving the quality of science that each one does.

The Institute's mission of operating as a “meeting point” for the new life sciences in Portugal seems thus to be on due course, also consolidated by the organization of a number of conferences, workshops and courses that regularly congregate here many of the players in the country. New scientific societies and “grass roots” organizations were actually born at the IGC (e.g., Portuguese Society for Developmental Biology, the “Portuguese fly meetings”, the Associação Viver a Ciência, the Gripnet.pt), having then grown, and eventually acquired independence in terms of localization as well. An identical evaluation, perhaps biased but again very positive, applies to the mission of operating as an entrance hall to the country. Thus, as in the past, every one of those 7 new group leaders moved to Oeiras from abroad, contributing to significantly reinforcing the local scientific community. The IGC has attracted and installed in Portugal nearly 50 group leaders, and some 60% of these stay in Portugal after leaving the Institute to set up their groups elsewhere. While here, foreigners or Portuguese, many play relevant roles in the scientific life of the country (for example, the last two Presidents of the Portuguese Society for Immunology are foreigners at the IGC). Those who return abroad, on the other hand, are excellent and well informed representatives of the growing quality of our research. The IGC has thus far exported group leaders to Spain, France, Germany, UK and Sweden, most of which had here their first opportunity to build a group in full autonomy.

The year of 2006 also saw the consolidation and re-organization of several of the Institute's technological platforms, both by the recruitment of new scientific personnel, as well as by the acquisition of modern and more performing machines through a relatively large grant from the National Research Council, which the Gulbenkian Foundation saw fit to supplement. The overbooked imaging facilities count now on new microscopes, particularly on a second “two-photon confocal”, the cell-sorter facility received a new many-colors machine, the unit for computational biology & bioinformatics boasts a “high performance cluster” of computers, the genotyping & gene expression facility is now equipped with both high and low-density chips and robots, capable of carrying on high-through put analyses, and the animal facilities were significantly ameliorated in equipment and spaces, such as a contention room for experiments in behavioral neurosciences, a zebra-fish facility and more fly rooms. New responsible scientists were appointed to the Units of Imaging & Cell Sorting, Informatics, Computational Biology & Bioinformatics, who have restructured the services, adapting them to the evolving needs of the users inside and outside the Institute.

What will certainly remain in the history of this Institute as a major step forward has been achieved in 2006, namely the agreement for cooperation in research and graduate education programs centered at the IGC, which was reached between the Champalimaud Foundation and the Gulbenkian Foundation. The Champalimaud Foundation came to life only a couple of years

ago, but it already entered the dreams of many scientists, Portuguese and otherwise. Thus, this is a Foundation entirely devoted to medical research, the size of which, as well as the policy announcements that were made public by its President, allow for great expectations. Decided to build a research center for basic and clinical research in cancer and neurosciences, but faced with the time it will take to have it ready, the Champalimaud Foundation searched for partnerships that would make it possible to initiate its own activities, while building up for its future. There is no more natural a partner than another private Foundation with similar objectives, operational flexibility and requirements of excellence. And there would hardly be a better place to host a Champalimaud Program than the IGC, which has chosen a structure and operation derived from a “host institution” model. From a mere common sense stand point, the agreement between the two Foundations is very good news. To optimize resources in order to innovate, do different, better and more, through cooperation rather than competition, would seem a justifiable decision anywhere; to share resources and objectives, synergizing investments and opening new possibilities in the pursuit of goals for bettering society is certainly a decision that calls for applause. Scientifically, as well, this agreement makes a lot of sense. The Champalimaud Foundation is determined to pursue research in the specific field of brain sciences, but is well aware that a sustained effort in any area of frontier is doomed if not based on a broad basis of biology; accordingly, the IGC offers a rich environment where evolutionary and population biology together with the genetics of complex traits, molecular, cellular and developmental biology, immunology, inflammation and the biology of host-microbe interactions, are all transversally integrated and serve the basis to investigate the genetic susceptibilities and the mechanisms of disease, in experimental models and in humans. It would appear, therefore, that the conditions are set for a convenient “incubation” of Champalimaud's neurosciences groups at the IGC, inaugurating the cooperative agreements between the two Foundations.

The choice of neurosciences as the theme for this first common effort is most natural, as both Foundations had independently reached the decision to invest in this area. Actually, the IGC, following suggestions of our Scientific Advisory Board, had already prepared a development plan for neurosciences that can now be implemented in better conditions. On the one hand, brain science is certainly the field of research that addresses the most intriguing and fundamental questions of human kind. The human brain is the most complex structure known in the entire Universe. To understand how we think and decide, why we like or dislike certain things, why we fear or prefer others, is an enormous challenge, but there is little doubt that the rewards will be very high for significant steps of progress. For a materialistic view of the world, the mind is but the operation of the brain and, sooner or later, the progress of science shall unravel this last frontier. On the other hand, this is perhaps the area of research in greatest expansion over the last few years: it is estimated that there are in the world over 100,000 scientists dedicated to neurosciences. Furthermore, rather than having to rely on introspection to access the secrets of the brain, a number of novel technologies and approaches were introduced over the last years, providing unsuspected ways to its genetics, functional architecture and operation. In the face of such progress, therefore, a program in brain sciences would only make sense if distinct from all others. The Champalimaud Programme at the IGC aims high: it aims at fostering innovative, risk-taking research, bringing in young scientists of world reputation, who are enthusiastic with the perspective of creating an internationally recognized center studying the biological bases of behavior. Scientifically, the strategic plan is to

address this question from alternative, yet complementary, organism-centered approaches, be these genetic, molecular, developmental, or “systems”. It is our conviction that such basic research will be instrumental in supporting and guiding clinical research in a range of diseases of increasing prevalence in modern societies, from psychiatric disorders to neurodegenerative conditions.

With the critical support of the National Research Council (FCT), a graduate programme in Brain & Behavioral Systems – the central theme of the research effort, will be launched in early 2007, aimed at identifying and educating young scientists and medical doctors in this area of biomedical sciences. This new programme in Neurosciences will complete the significant evolution of the IGC's responsibilities in what concerns graduate education that took place last year. Thus, the Board of Trustees of the Gulbenkian PhD Program in Biomedicine decided to discontinue the program. After 12 years of organizing graduate education based on an international faculty and essentially directed at sending abroad our best students for thesis work, the time had come to re-think our contribution. The Board correctly felt that these programs were no longer innovative; all the more so as several others, modeled accordingly, had appeared in Portugal. Two other aspects are quite relevant: on the one hand, the Portuguese scientific community in life sciences has undergone a tremendous progress in the last 12 years. In contrast with the early 1990's, there are now a considerable number of excellent laboratories with international standards, located at institutions with excellent infrastructures. It may no longer be justified, therefore, to send abroad the majority of our students for thesis work, depleting our own laboratories of the best candidates. Portugal might have reached “maturity” in graduate education, and could now follow the conventional practice in advanced countries, conducting graduate education at home and sending abroad post-docs instead. On the other hand, as graduate education in general areas of biomedical sciences was progressively ensured, new needs were felt in upcoming topics. Accordingly, the IGC launched in 2005 a new PhD program in Computational Biology, while reinforcing the “internal”, generalist graduate program, dedicated to support and organize the students in our own laboratories. This tendency was consolidated in 2006, by publishing a single national call for students and by supporting their initial months at the Institute. Current plans attempt to develop this strategy of combining two types of programs: those of very specific objectives and topics that are largely based on foreign laboratories for thesis work, with a generalist program, in which students are essentially hosted at the IGC and associate groups.

An important addition to the institutional efforts to engage progressively new local groups in Computational Biology was the foundation of the respective Collaboratorium, with the support of the Fundação Luso-Americana para o Desenvolvimento (FLAD). The Collaboratorium will work in close interaction with the PhD programme, profiting from the visiting professors to retain them for longer periods in Portugal, promoting their cooperative interactions with other centers in Lisbon, Aveiro, Porto and Braga.

The year of 2006 was also the first when all three PhD programs that are conducted under IGC's responsibility had a common annual meeting. While it would have been better to retreat from the daily Institute's life, for financial reasons the meeting was held at the IGC. Yet, this was a most rewarding time for the participants and for all of us. Many of the students are

working abroad and this was the occasion to report on progresses and difficulties, to exchange experiences, successes and disappointments. The fact that different programs were together added to the interest, removing any doubt whatsoever that diversity is our greatest asset, and its culture a most determined goal.

Equally rewarding was the Second Gulbenkian Alumni Meeting, congregating this time even more colleagues than last year, and dedicated to discuss inbreeding in Portuguese universities, a very serious problem indeed.

Amongst the various other meetings that were held at the Institute, I should perhaps underline the two workshops organized by the IGC's Post-docs. It is often the case in research institutions that, while both Faculty and PhD students are well structured and organized, post-doctoral fellows are left "isolated" in their own laboratories. IGC's post-docs, however, have constructed their own community of specific concerns and interests within the Institute. One of the icons of their activities is the organization of workshops on topics of their own research, to which they invite world leaders and competitors. In 2006, workshops on "Coalescence Theory" and "Mineralized Tissue Formation" were held and a third, on "Genetics of behavior pathologies" was organized to take place early in 2007.

I cannot close this section without a reference to the IGC's Open Day, perhaps one of the most rewarding in the year. Beyond its value in promoting science in society by showing what we do and how we do it to the 1,000 or so visitors, it is a fantastic experience to discover the enthusiasm and the enchantment of so many children when exposed to the beauty of the natural phenomena and to the understanding we have reached. As it is often said, the human brain "secretes" this wish for understanding the world and, at this age, it is particularly tainted by creativity and excitement that cannot but be contagious. As this effort congregates all of us at the IGC, and this is a very happy occasion, the Open Days remain a strongly cohesive initiative that we shall keep doing at all costs.

It would seem that the IGC has reached a number of its original goals, particularly in the "domestic" aspects of its activity. In matters of education, "cross-fertilization" of other institutions in the country, promotion of science in society, internationalization of the Portuguese scientific community, the Institute has done well by most reasonable, if critical, accounts. The IGC is a research institution, but its specific missions have aimed, primarily, at "local" objectives. Hence, the strategic choices on the institutional structural design and mode of operation, as well as most of our attention and financial "room", have been directed at those missions. Considering the Foundation's policy of taking risks in new initiatives but letting them to others once their interest and mode of operation have been established, it is perhaps time to look ahead for novel challenges that might serve society better. The Foundation has a long history of constant evaluation of its own activities, in order to adapt them to the evolving conditions of society, often a result of its very intervention. The challenge could now be to reach scientific excellence and a higher impact, leveling the IGC with the most successful European institutions.

As every year, I must close this report with a sincere acknowledgement for the constant support from the Scientific Advisory Board of the Institute. Their advice, criticism and friendship are invaluable to all of us. The Board of Administration of the Gulbenkian Foundation has had the vision of maintaining support in basic scientific research and education. All the members of the Board have constantly offered us guidance and encouragement, and also attention and

perception of our difficulties. In short the Board make us all feel at home in the Institute, and we are deeply touched by their trust. It goes without saying that every one at the IGC deserves credit and gratitude for all that was done, and for one more thing: for making it such a pleasure to come here every day.

António Coutinho

RESEARCH

The IGC's scientific interests are centered on the genetic basis of development and evolution of complex systems, privileging organism-centered approaches and using experimental models that include plants, yeast, flies, fish and mice, while working on the genetics of complex human diseases as well. A strong theoretical sector is also one of the IGC's specificities.

This Annual Report presents summaries of the individual research projects, their full description being available in the IGC's web page, following short introductory notes to the various areas of research. I thank all the colleagues who helped in the preparation of these summaries. As in previous years the report has been edited by Sérgio Gulbenkian with the help of Maria Matoso.

Experimental Evolution

The groups concerned with Evolutionary Biology aim at studying the processes of natural selection, genetic drift and mutation, in general, and of adaptation to novel environments, in particular. "Experimental evolution" approaches are preferred, where the experimenter seeks to control the conditions under which evolution occurs, in a reproducible manner, in order to observe its course of action. This approach has proven successful to test basic theory on the evolution of aging and life-history, on antibiotic and parasite resistance, on co-evolution and eusociality, on frequency and density-dependent natural selection, on the role of mutators in evolution, among other topics. When coupled with the analysis of genes implicated during evolution, a description of adaptive landscapes can be integrated with the physiological and developmental mechanisms generating them.

The model organisms presently used in the Institute include *Escherichia coli*, *Drosophila* spp. and *Caenorhabditis elegans*. Our common research interests are centered around the genetics of adaptation, with specific projects in: 1) genetic mapping of life-history traits during reverse evolution and laboratory adaptation, using linkage disequilibrium association mapping in *Drosophila*; 2) mating system evolution in *C.elegans*; 3) genetic networks and cis-regulatory gene evolution generating interspecific morphological variation in *Drosophila*; 4) genetic mapping of adaptation to an environmental toxin in *D.melanogaster*; 5) evolutionary dynamics of mutator *E. coli*; 6) estimation of the distribution of effects of novel beneficial mutations in *E. coli* when adapting to novel environments; 7) co-adaptation between bacteria and plasmids; 8) population genetics models to assess how adaptation shapes patterns of genetic variation in natural populations; 9) theoretical models for the evolution of cooperation.

We hope that the Institute's efforts in this area will re-inforce evolutionary thinking in other programs and contribute to promote the study and public knowledge of evolution in Portugal.

The role of the social interaction in bacterial diversity and evolution.

Members: Francisco Dionisio, Isabel Gordo.

Students and Technicians: Helena Soares e Cláudia Marques.

Evolution of Bacteria: the role of the interactions with neighboring bacterial communities and plasmids.

Members: Francisco Dionisio.

Students and Technicians: Rui Martins, Maria Helena Soares, David Félix, Cláudia Marques, João Alpedrinha.

Population Genetics of adaptation in E. coli.

Members: Isabel Gordo, Francisco Dionisio, Lisete Fernandes.

Students and Technicians: Lilia Perfeito, Catarina Mota.

External Collaborators: Doris Bachtrog (University of San Diego, California, USA).

Adaptive evolution in spatially structured asexual populations.

Members: Isabel Gordo.

Students and Technicians: Lilia Perfeito, Inês Pereira.

External Collaborators: Paulo Campos (Universidade Federal Rural de Pernambuco, Brazil).

Muller's ratchet in complex networks.

Members: Isabel Gordo, Francisco Dionisio.

Students and Technicians: Jaime Combadão.

External Collaborators: Paulo Campos (Universidade Federal Rural de Pernambuco, Brazil).

Diversity and molecular evolution of pathogen populations.

Members: Isabel Gordo, Gabriela Gomes.

External Collaborators: Paulo Campos (Universidade Federal Rural de Pernambuco, Brazil).

Analysis of early transcriptional activation and germ-line segregation in Drosophila melanogaster.

Members: Rui Martinho.

Students and Technicians: Rui Tostões, Tânia Ferreira, Ana Rita Marques.

External Collaborators: Jordi Casanova (CSIC, Instituto de Biología Molecular de Barcelona, Spain).

Effect of castration in the germinal center reaction after a primary immune response.

Members: Margarida Souto-Carneiro.

Students and Technicians: Célia Ferreira, Isabel Belo, Maria João Lagareiro.

Second Harmonic Generation as a Novel Tool for Accessing Collagen Network Disruption in Cartilaginous Tissue of Arthropathies.

Members: Margarida Souto-Carneiro.

Students and Technicians: Maria João Lagareiro, Ricardo Henriques, Isabel Belo, Célia Ferreira, Bruno Raposo.

The molecular genetics of adaptation to octanoic acid in outbred populations of *D. melanogaster*.

Members: Elio Sucena.

Students and Technicians: Alexandre Leitão.

Linking regulatory function of innate and adaptive immune systems: the role of Foxp in *Drosophila*.

Members: Elio Sucena.

Students and Technicians: Emília Santos.

Experimental evolution and the genetic basis of adaptation: analysis of candidate genes during reverse evolution.

Members: Henrique Teotonio.

Students and Technicians: Martina Bradic.

External Collaborators: Anthony Long (University of California Irvine, California, USA).

Experimental evolution of outcrossing in *Caenorhabditis elegans*.

Members: Henrique Teotonio.

Students and Technicians: Sara Carvalho, Diogo Manoel.

External Collaborators: Patrick Phillips (University of Oregon, Eugene, USA).

Sex and the maintenance of diversity in heterogeneous habitats.

Members: Henrique Teotonio, Sara Magalhães.

Complex Genetics

The genome sequencing projects resulted in a range of technologies and a volume of information that brought about unprecedented developments in genetic analysis, allowing biologists from all areas to address questions that had long been intractable. One of these relates to the genetics of “complex” phenotypes, which do not follow classical mendelian inheritance, and are governed by many genetic and non-genetic factors. The approaches to complex phenotypes are differentiated but complementary: cell biology and molecular genetics, bioinformatics, and statistical genetics. Experimental systems, such as the fly and the mouse, aim at understanding the generation and the genetic architecture of such phenotypes. In humans, current work concerns common human diseases like diabetes, obesity, heart diseases, psychiatric disorders, but also behavioral traits. Beyond the importance of disease genetics to predictive medicine, it is hoped that detailed knowledge on genes and molecular mechanisms will contribute a better understanding of disease processes and novel possibilities of therapeutic intervention.

At the IGC, several groups are dedicated to the genetic dissection of complex traits, studying human disease, mouse models of disease, and the evolution of genetic traits at the population level. Research in human genetics, conducted in intimate collaboration with patients associations and MDs in several hospitals, is focused on family studies of autism, systemic lupus, Type I diabetes, and brain stroke, while the mouse projects include the genetics of

susceptibility to malaria and diabetes. Research in bioinformatics and statistical population genetics has also been launched, leading to the development of statistical methods that incorporate multiple parameters in phenotype definition, as well as methods assessing the contribution of multiple genes to specific quantitative phenotypes. A gene expression unit is now fully operational at the Institute, while public financing was competitively obtained for installing a technology platform for medium-throughput DNA sequencing and genotyping.

Genetic diversity of the Azorean population.

Members: Luisa Mota Vieira.

Students and Technicians: Claudia C. Branco, Raquel Palla, Silvia Lino and Ester Cabrol.

Hereditary hemochromatosis in São Miguel island (Azores): A population and clinical approach.

Members: Luisa Mota-Vieira.

Students and Technicians: Laura de Fez, Paula R. Pacheco, Rita Cabral.

External Collaborators: Graça Porto, Pedro Rodrigues, (IRIS, Iron genes and immune Systems, IBMC, Universidade do Porto, Porto, Portugal).

Genetic and consanguinity of congenital heart disease in Azores.

Members: Luisa Mota-Vieira.

Students and Technicians: Rita Cabral, Paula R Pacheco, Laura de Fez.

External Collaborators: Rui Anjos (Hospital de Santa cruz, Carnaxide, Portugal), Carlos Pereira Duarte Carvalho, Clara Macedo (HDES, Ponta Delgada, Azores, Portugal).

Genomic convergence applied to stroke.

Members: Sofia Oliveira.

Students and Technicians: Tiago Krug, Maria Benedita Fonseca.

External Collaborators: José Ferro and Liliana Gouveia (Hospital de Santa Maria, Lisboa, Portugal), Ilda Matos (Hospital Distrital de Mirandela, Portugal), Mário Rui Silva and João Paulo Gabriel (Hospital São Pedro, Vila Real, Portugal), Gabriela Lopes, Manuel Correia and Assunção Tuna (Hospital Geral de Santo António, Porto, Portugal), Miguel Viana-Baptista (Hospital Garcia da Horta, Almada, Portugal), Ana Amélia Pinto and Rita Silva (Hospital Fernando Fonseca, Amadora Sintra, Portugal), João Ramalho Fontes and Carla Ferreira (Hospital São Marcos, Braga, Portugal), Miguel Rodrigues (Hospital de São Bernardo, Setúbal, Portugal), Astrid Vicente (INSARJ), Rita Silva (Hospital Espírito Santo, Évora, Portugal), Maria do Carmo Grangeio (Centro de Medicina de Reabilitação, Alcoitão, Portugal).

Genetic, molecular and cellular study of Behçet's Disease.

Members: Sofia Oliveira, Jocelyne Demengeot.

Students and Technicians: Maria Francisca Moraes-Fontes, Tiago Krug, Benedita Fonseca, Joana Xavier.

External Collaborators: Jorge Crespo, Gorete Jesus, Ana Bernardino, Margarida Coutinho, Clarinda Neves, Susana Cavadas, Anabela Oliveira, Sandra Rodrigues and Mariana de Sousa (Hospital Infante D. Pedro, Aveiro, Portugal), José Vaz Patto and Filipe Barcelos (Instituto Português de Reumatologia, Lisboa, Portugal), Joana Vedes (Hospital de Sousa Martins,

Guarda, Portugal), Maria J. Serra (Hospital dos Capuchos, Lisboa, Portugal), Manuel Salgado (Hospital Pediátrico de Coimbra, Coimbra, Portugal), Catarina Resende (Hospital de Santa Maria, Lisboa, Portugal).

Parkinson's disease proteomics.

Members: Sofia Oliveira.

Students and Technicians: Benedita Fonseca, Sara Violante.

External Collaborators: Joaquim Ferreira, Leonor Correia-Guedes, Mário Miguel Rosa, Miguel Coelho and Cristina Sampaio (Hospital de Santa Maria, Lisboa, Portugal), Ana Varela Coelho (ITQB/UNL, Oeiras, Portugal).

Genetic determinants of resistance to hepatic infection in murine malaria models.

Members: Carlos Penha-Gonçalves, Maria Mota.

Students and Technicians: Ligia Gonçalves.

Genetic analysis of response to toll ligands in the Non-Obese Diabetic mouse.

Members: Carlos Penha-Gonçalves.

Students and Technicians: Joana Rodo.

Generation of mouse models for pregnancy-associated malaria: pathology and immunological characterization.

Members: Carlos Penha-Gonçalves, Cláudio Marinho.

Students and Technicians: Rita Neres.

Type 1 Diabetes: Associated immunopathology and genetic susceptibility.

Members: Carlos Penha-Gonçalves.

Students and Technicians: Inês Rolim.

External Collaborators: Mamuela Catarino (Fac. Farmácia, Universidade de Lisboa), Rosário Sancho, Dário Ligeiro (Centro Histocompatibilidade do Sul), José Manuel Boavida, Rui Duarte (Associação Protectora dos Diabéticos de Portugal), Guilhermina Fonseca, Rosa Pina (Hospital D. Estefânia, Lisboa), Maria Manuela Madeira, Lurdes Sampaio (Hospital de Santa Maria, Lisboa).

Genetics of Human Malaria.

Members: Carlos Penha-Gonçalves, Maria de Jesus Trovoada.

Students and Technicians: Rosário Sambo.

External Collaborators: Centro Nacional de Endemias, S. Tomé e Príncipe.

Genetic Epidemiology of Autism.

Members: Astrid Vicente, Madalena Martins, Marta Barreto.

Students and Technicians: Ana Margarida Coutinho, Catarina Correia, Lara Lourenço, Teresa Barrio.

External Collaborators: Guiomar Oliveira (Hospital Pediátrico de Coimbra, Portugal); Patricia Maciel (Universidade do Minho, Portugal), Michael Gill (Trinity College, University of Dublin, Republic of Ireland); Louise Gallagher (Trinity College, University of Dublin, Republic of

Ireland); Jason Moore (Dartmouth Medical School, USA); Autism Genome Project International Consortium for the identification of genetic factors for Autism.

Pharmacogenetics of risperidone therapy in autism spectrum disorders.

Members: Astrid Vicente, Madalena Martins, Marta Barreto.

Students and Technicians: Ana Margarida Coutinho, Catarina Correia, Lara Lourenço, Teresa Barrio.

External Collaborators: Guiomar Oliveira (Hospital Pediátrico de Coimbra, Portugal).

Genetic factors involved in susceptibility to stroke and in outcome after 3 and 12 months.

Members: Astrid Vicente, Sofia Oliveira.

Students and Technicians: Helena Manso, Lara Lourenço, Teresa Barrio, Tiago Krug.

External Collaborators: José Mourão Cabral Ferro (IMM/FML), José Marinho Falcão (INSA), Isabel Albergaria (INSA).

Virology and Immunity

The pathogenesis of infections is not a one-sided issue, as it reflects evolving interactions between the host immune system and the pathogens, such that long-term survival of both the pathogen and the host can be achieved. Accordingly, emerging infections are often highly lethal, whereas adapted infectious agents tend to be less pathogenic, having evolved strategies to survive and replicate without severe pathological consequences. Viruses have been particularly efficient in evolving strategies that impinge and modify the cell biology and immune responses of their hosts. It follows that viral genes constitute an exploitable library of ready-made tools for gene manipulation or therapy, and for the design of novel drugs and vaccines. In the past, the majority of such virus “host evasion” genes have been identified through their homologies, using bioinformatic approaches. It is clear, however, that some of these evasion molecules do not have structural homologues, but are functional equivalents to components of the vertebrate immune system. These are identifiable through appropriate functional assays, and provide a source of novel modifiers of immunity and cell biology. This theme forms the basis of our research programme. The ability to genetically manipulate both the virus and the host, notably by producing transgenic mice for viral genes, offers the potential to dissect the molecular mechanisms involved in the virus/host interplay.

Using a gammaherpes virus model, several viral genes have been identified which are involved in the establishment of “latency” in B lymphocytes, and reveal alternative strategies for host evasion: neutralization of chemokines, increased ubiquitination and degradation of MHC molecules, interaction with signalling molecules or cascades in lymphocytes. Through structural (bioinformatic) and functional approaches, a number of genes in African Swine Fever Virus have been identified, which ensure evasion via inhibition of Toll-like receptor and Type I and Type II Interferon pathways, via induction of apoptosis, or via inhibiting transcription of key genes for both the innate (NFkB pathway) and acquired (NFAT) immune defense systems.

The potential and application of virus host evasion genes that modify apoptosis and cytokine responses.

Members: R.M.E. Parkhouse.

Students and Technicians: Sílvia Almeida, Sílvia Correia, Rute Nascimento, Vivian Oliveira, Ana Luísa Reis, Lara Santos, Pedro Ferreira, Hugo Soares.

Control of human, bovine and porcine cysticercosis through vaccination and improved diagnosis.

Member: R.M.E. Parkhouse.

Collaborators: Dr. T. Garate (Instituto de Salud Carlos III, Centro Nacional de Microbiología, Madrid, Spain), Dr. L. Harrison (University of Edinburgh, Department of Tropical Animal Health, Centre for Tropical Veterinary Medicine, Scotland), Dr. E. Sciutto (Universidad Nacional Autónoma de México, Instituto de Investigaciones Biomédicas, México), Prof. M. Cortez (Universidad de Carabobo, Venezuela) and Dr. H. Garcia, Universidad Peruana Cayetano Heredia, Lima, Peru).

Control of African swine fever (ASF) through improved diagnosis.

Member: R.M.E. Parkhouse.

Student: Ana Luísa Reis.

Collaborator: Alexandre Leitão (Laboratório de Doenças Infecciosas, Faculdade de Medicina Veterinária, Universidade Técnica de Lisboa).

Expression of aberrant forms of CD22 on B lymphocytes in Cd22a lupus-prone mice affects ligand binding.

Member: R.M.E. Parkhouse.

Collaborator: Shozo Izui (University Medical Center, Geneva, Switzerland).

Transcriptome analysis of germinal centre B cells during gammaherpesvirus latent infection.

Members: Pedro Simas, Sofia Marques.

Students and Technicians: Marta Alenquer.

Modulation of NF- κ B transcriptional activity during gamma herpesvirus infection.

Members: Pedro Simas, Miguel Soares.

Students and Technicians Lénia Rodrigues.

Herpesvirus modulation of B-lymphocyte function.

Members: Pedro Simas, Marta Miranda.

Students and Technicians Lénia Rodrigues, Filipa Lopes and Marta Alenquer.

External Collaborators: Xosé Bustello (Centro de Investigación del Cáncer/Cancer Research Center, University of Salamanca, Salamanca, Spain).

Inflammation and Immunity

Inflammation is a stress reaction causing 'rubor, calor, dolor, tumor' (redness, heat, pain and swelling) but it represents the body's defense to a variety of injuries. Inflammatory reactions often occur as a result of microbial infections, involving both the immediate activation of the "innate immune system", as well as the adaptive response of lymphocytes, cooperating in the clearance of pathogens. Inflammatory reactions should thus be perceived as a beneficial response that allows the immune system to deal with invading microbes. If uncontrolled, however, "innate" responses might be lethal, as in septic shock, while chronic inflammation often leads to tissue damage, at the origin of degenerative diseases (e.g., atherosclerosis, rheumatism, multiple sclerosis), many of which are autoimmune and continue to represent a serious therapeutic challenge. To be effective and, yet, not provoke disease, inflammatory reactions must thus be regulated. The molecular basis of inflammation and respective controls are, therefore, of utmost importance in biomedicine. Several groups at the IGC are concerned, directly or indirectly, with these questions, analyzing cellular and molecular mechanisms regulating inflammation. The specificity of our research relates to the complementarity of approaches (disease genetics, cell and molecular biology, immunology, theoretical biology), and to common concerns with Regulatory T cells, tissue-protective genes and mechanisms, which the IGC groups have helped to establish. Genetic analysis of inflammatory processes can provide relevant information on the molecular mechanisms involved. This approach has been undertaken in man and mouse, studying either patients and families, or various mouse strains and their crosses, in order to identify genes that are associated with susceptibility to inflammatory disease.

Dynamics and function of regulatory T cells during inflammatory pathologies.

Members: Jocelyne Demengeot, Marie Louise Bergman, Iris Caramalho.

Students and Technicians: Santiago Zelenay, Francisca Fontes, Joao Duarte, Lurdes Duarte.

Effector molecules in adaptive immune regulation.

Members: Jocelyne Demengeot, Miguel Soares.

Students and Technicians: Santiago Zelenay, Angelo Chora.

Notch signaling and B lymphocyte regulation.

Members : Jocelyne Demengeot, Leonor Sarmiento, Leonor Parreira.

Students: Manuel Rebelo, Margarida Santos, Ana Agua Doce, Elia Neves.

External Collaborators: Freddy Radtke (SIECR, Switzerland), Warren Pear (Univ. Pennsylvania, USA).

Recombination Activating Genes 1 and 2 and Vertebrate Genome Stability.

Members: Jocelyne Demengeot, Leonor Sarmiento, Carlos Penha Gonzalves, Antonio Jacinto, Moises Mallo.

Students and Technicians: Paulo Almeida, Ana Novóia, Paulo Bettencourt

Autoantibody repertoires and regulatory T-cells in human and murine lupus.

Members: Constantin Fesel.

Students and Technicians: Luiz Fernando Goulart.

Distributed aptamer selection for fine specificity characterisation of SLE-associated autoantibodies.

Members: Constantin Fesel.

Students and Technicians: Ricardo de Souza e Paiva.

Tolerance induction in autoimmunity: reprogramming the immune system with monoclonal antibodies.

Members: Luis Graca, Ana Água-Doce.

Students and Technicians: Joana Duarte.

External Collaborators: Ruy Ribeiro (Los Alamos National Laboratory, NM, USA).

IL-10 and its role in regulation of immunological tolerance.

Members: Matthias Haury.

Students and Technicians: Dinis Calado, Rosa Maria Santos.

External Collaborators: Dan Holmberg, Univ. Umea, Sweden.

Immune recovery after Autologous Stem Cell Transplantation - modulation by Ig and potential clinical application.

Members: Cristina João, Ana Elisabete Pires, Maria Gomes da Silva.

External Collaborators: Luis F. Porrata (Mayo Clinic, Rochester, USA), Svetomir Markovic (Mayo Clinic, Rochester, MN, USA).

Molecular mechanisms underlying the protective effect of HO-1 derived CO: interaction with the NF-kappaB signal transduction pathway.

Members: Miguel Soares, Gabriela Silva.

Student: Mark Pena Seldon.

External Collaborators: Josef Anrather (University of Cornell, New York City, USA).

Modulation of the pathogenesis of sepsis by HO-1.

Members: Miguel Soares.

Student: László Tokaji.

Regulation of T-cell mediated immune responses by the stress responsive gene heme oxygenase-1.

Member: Miguel Soares and Jocelyne Demengeot.

Students: Angelo Chora, Andreia Cunha.

Collaborators: Paulo Fontoura (Faculdade de Ciências Médicas, Universidade Nova de Lisboa), Lawrence Steinman (Department of Neurology and Neurological Sciences, Beckman Center for Molecular Medicine, Stanford University, CA, USA).

Inhaled carbon monoxide suppresses the development of atherosclerotic lesions: Assessment of mechanism of action and possible therapeutic applications.

Member: Miguel Soares, Isabel Pombo Gregoire, Moises Mallo.

Student: László Tokaji.

Expression of heme oxygenase-1 controls the pathogenesis of severe acute malaria (SAM).

Members: Miguel Soares, Maria Manuel Mota, Ana Pamplona.

Student: Angelo Chora.

Expression of heme-oxygenase-1 in regulatory T cells.

Members: Miguel Soares, Jocelyne Demengeot.

Students: Santiago Zelenay, Angelo Chora.

The role of Toll-like Receptors in the control of intercellular communication during T lymphocytes activation.

Members: Salvatore Valitutti, Elisabetta Padovan

External Collaborators: Markus Simon and Marina Freudenberg (Max Planck Institute for Immunobiology, Freiburg, D)

Malaria and Immunity

Malaria remains the most devastating parasitic disease worldwide. In any given year, nearly ten per cent of the global population will suffer from malaria 500 million clinical cases and more than 1 million will die. In Africa, the disease kills one child in twenty before 5 years of age, representing nearly 10% of over 10 million children who die at these ages. In addition, malaria has a major negative impact in economic development and stability of many developing countries. Various attempts at eradicating malaria have thus far failed.

Most fatal cases of malaria occur in this acute phase of previously uninfected individuals, particularly in young children, by mechanisms that involve both host immune system and parasite factors yet to be fully explained. We currently lack an efficacious vaccine against malaria. This may be explained by the fact that malaria infection leaves little or no “immunity” such that the infection becomes chronic or the individual is recurrently re-infected. Hence, it seems that vaccine development requires prior understanding of this unusual immunological behavior.

At the IGC, several groups are dedicated to study distinct but complementary aspects of the interactions between the malaria parasite (*Plasmodium*) with its vertebrate hosts, and how the disease spreads in populations. In turn, each of these groups collaborates with others in the Institute (and elsewhere), such that malaria has come to occupy a considerable fraction of our research. One of our approaches is genetics-based, aiming at identifying factors that confer resistance to malaria infection and its severe complications. This work has led to the identification of several relevant chromosomal regions, and the isolation of the responsible genes is now underway, while mapping loci controlling hepatic infection. The extension of such genetic analyses to human populations has now been initiated in the Island of Príncipe, in a

close collaboration with the Government of S. Tomé e Príncipe and the Cooperation Sector of the Gulbenkian Foundation. The availability of the complete genomes of several *Plasmodia*, on the other hand, makes it possible to search for molecules that activate “innate immunity”, or participate of other interactions with host cell receptors that are necessary for infection. Because inflammatory reactions can be pathogenic, cerebral malaria representing one such example, regulation of the acute responses to infection must be investigated.

The risk for malaria infection and disease varies wildly across Tropical Africa, and the overall results of therapeutic or environmental interventions also vary widely, suggesting unexpected thresholds in transmission. Furthermore, to be effective, interventions in malaria need not be radical, as they might bring prevailing conditions across those thresholds. By developing mathematical models, we aim at a better understanding of malaria epidemiology and control. We have recently shown that variations in the “reinfection threshold” that is intrinsic to the population dynamics of recurrent infections may explain those discrepancies.

CD4+CD25+ T cells facilitate murine infection by *P. berghei*.

Member: António Coutinho, Elsa Seixas.

The role of Toll-like receptors in cerebral malaria.

Member: Antonio Coutinho, Christophe Gregoire, Elsa Seixas, Andrew Waters.

Student: Vasco Correia.

In search of malaria mitogens.

Member: Antonio Coutinho, Elsa Seixas, Christophe Gregoire, Andrew Waters.

Student: Vasco Correia

Innate immunity in malaria infection: interactions of Dendritic Cells (DC) and other antigen presenting cells with blood stages *P. chabaudi*.

Member: António Coutinho, Elsa Seixas.

The innate immune response during the hepatic stage of infection in malaria.

Members: Antonio Coutinho, Christophe Gregoire, Elsa Seixas, Maria Mota.

Students: Ana Rita França.

Role of microglia in neuropathogenesis.

Members: Sukalyan Chatterjee, Teresa Faria Pais.

Students and Technicians: Catarina Figueiredo, M^a Hortense Matos.

The role of host cell factors in the full development of the malaria parasite inside hepatocytes.

Members: Maria Mota, Miguel Prudêncio, Sabrina Epiphânio.

Students and Technicians: Cristina Rodrigues, Sónia Albuquerque, Margarida Cunha-Rodrigues, Sílvia Portugal.

External Collaborators: Cenix BioSciences, Dresden, Germany.

The role of host factors in the course and pathology of a malaria infection.

Members: Maria Mota, Ana Pamplona, Miguel Soares, Sérgio Dias.

Students and Technicians: Margarida Cunha-Rodrigues, Marta Campos.

The role of CD8 T cells on the development of cerebral malaria at the last stage of the disease.

Members: Sylviane Pied, Margarida Vigário.

Students and Technicians: Fernanda Baptista.

External Collaborators: Virgilio Do Rosario (CMDT, IHMT, Lisbon, Portugal) Antonio Bandeira (Institut Pasteur Paris, France).

Study of the role play by the interactions of T lymphocytes, glial and endothelial cell with Plasmodium in the genesis of cerebral malaria.

Members: Sylviane Pied, Johann Truccolo.

External Collaborators: Virgilio do Rosario (CMDT, Lisbon Portugal); Beatrice Reagnault (Institut Pasteur, Paris, France), Pierre-André Cazenave (CNRS URA 1961, UPMC, Institut Pasteur Paris, France).

Evaluation of functional parasite specific IgE response in Plasmodium falciparum infected patients manifesting different clinical forms of malaria.

Members: Sylviane Pied, Constantin Fesel, Youri Chanseaud.

Students and Technicians: Joana Duarte.

External Collaborators: Vincent Guiyedi (Institut Pasteur Paris, France), Salah Mécheri and Pierre-André Cazenave (Pr UPMC, Institut Pasteur Paris, France).

Analysis of the repertoires of Immunoglobulins G (IgG) self-reactivity to brain antigens in Plasmodium falciparum infected patients manifesting different clinical forms of malaria.

Members: Sylviane Pied, Constantin Fesel, Youri Chanseaud.

Students and Technicians: Vincent Guiyedi

External Collaborators: Maryvonne Kombila (CHL Libreville, Gabon), Gyan C. (Mishra, NCCS, Pune, India), Pierre-André Cazenave (Pr UPMC, Institut Pasteur Paris, France).

Cellular Pathogenesis of Malaria.

Members: Miguel Seabra, Maria Mota.

Students and Technicians: Mafalda Silva.

Developmental Biology in Animals and Plants

The search for the mechanisms that guide the affairs of an embryo in its way from fertilization to a full-grown organism is a major topic at the IGC, the variety and complexity of the underlying processes being reflected in the diversity of questions, approaches and biological models employed by our groups. A common theme in biology, however, is that similar cellular or molecular mechanisms are used once and again to control specific processes in different organisms and within different areas of the same embryo. We learned this in the evolution of

species, often resulting from small variations in developmental processes, or even in disease where, for instance, tumor metastasis results from abnormalities in the physiological mechanisms that control formation of tissues and organs. This basic concept has a variety of theoretical and practical implications. The knowledge gained in one particular system can be of enormous relevance for the understanding of another, apparently unrelated, problem. This allows for choosing the particular experimental model that offers the best technical possibilities to approach specific questions, while addressing very general questions. In addition, it leads to interactions among groups working in apparently distinct areas, which may result in very fruitful collaborations.

Unquestionably, the Developmental Biology groups have had, and continue to have, a major part in the scientific outputs of the IGC and in building its international reputation of excellence. In addition, these groups and respective leaders play a critical role in driving the set-up, development and best usage of basic facilities at the Institute, such as the imaging, transgenic mice, and Affymetrix gene chip units.

A comparative analysis of the Arabidopsis sperm cell transcriptome to decipher the role of the male gametes in double fertilization.

Members: Jörg Becker, Ana Maria Vieira, Nuno Moreno, José Feijo.

Students and Technicians: Gabriela Gomes.

External Collaborators: Sheila Mc Cormick (Berkeley, CA, USA).

Isolation and study of novel head-inducing genes expressed in the Anterior Visceral Endoderm.

Members: José A. Belo.

Students and Technicians: Mário Filipe, Sara Marques, Lisa Gonçalves, Ana C. Silva.

External Collaborators: Herbert Steinbeisser (Dep. Human Genetics, Medical School, University of Heidelberg, Germany).

Identification of alternative promoter usage for the matrix Gla protein gene.

Member: José A. Belo.

Students and Technicians: Ana Cristina Silva, Marta Vitorino.

Collaborators: Leonor Cancela and Natércia Conceição (CCMAR, UAIG, Portugal).

Transcriptional Regulation of Caronte during Embryonic Development.

Members: José A. Belo and Ana Teresa Tavares.

Students and Technicians: Ana Cristina Silva, Sofia Andrade.

The Role of VEGF and its Receptors in Tumour Growth and Angiogenesis.

Members: Sérgio Dias, Cristina Casalou, Ana Sofia Cachaço.

Students: Rita Fragoso, Ana Paula Elias, Catarina Osório.

External Collaborators: Shahin Rafii (Cornell University, NY, USA); Zhenping Zhu, Yan Wu (ImClone Systems, NY, USA); Genentech (Napoleone Ferrara); Maria Gomes Silva (IPOFG, Lisbon, Portugal).

Endothelial Progenitors: their role in Health and disease.

Members: Sérgio Dias, Carla Real.

Students: Cátia Igreja, Francisco Caiado, Catarina Osório.

External Collaborators: Shahin Rafii (Cornell University, NY, USA); Antonio Duarte (F. Medicina Veterinária/IGC); José Boavida (Associação Protectora dos Diabéticos de Portugal); Ana Bastos (Serviço Oftalmologia, Hospital Santa Maria).

cDNA Microarray Technology in Diagnosis and Monitoring for Oncology patients.

Members: Sérgio Dias and Jorg Becker.

Students and Technicians: Cátia Igreja.

Angiogenesis in Cervical Neoplasms: clinical and molecular correlates.

Members: Sérgio Dias, Ana Cachaço.

External Collaborators: Ana Félix (Anatomia Patológica, IPOFG, Lisbon).

Arteriogenesis identification of novel members of the Notch pathway involved in arterial cell fate determination.

Members: Antonio Duarte, Ana Cristina Borges, Jorg Becker.

Students and technicians: Alexandre Trindade, Patrícia Rodrigues.

Use of transgenic conditional overexpression to address the function of a novel mammalian Delta homologue, mDII4.

Members: Antonio Duarte.

Students and technicians: Dusan Djokovic, Alexandre Trindade, Sónia Ventura.

Alternative Splicing in Arabidopsis.

Members: Paula Duque.

Students and Technicians: Sofia Carvalho, Raquel Carvalho.

External Collaborators: Nam-Hai Chua (The Rockefeller University, USA).

A genetic and molecular approach to the biophysics of cell-cell communication during sexual reproduction in plants.

Members: José Feijó, Leonor C. Boavida, Ana Maria Vieira, Ana Margarida Prado.

Neurogenesis: from EC cells to embryos.

Members: Domingos Henrique, Evguenia Bekman, Cláudia Valente, Elsa Abranches.

Students and Technicians: Rita Fior, Susana Rocha, Filipe Vilas-Boas, Sara Ferreira.

Dpp signalling orchestrates dorsal closure by regulating cell shape changes both in the amnioserosa and in the epidermis.

Members: Antonio Jacinto.

Students and Technicians: Beatriz Garcia.

External Collaborators: Alfonso Martinez Arias (University of Cambridge, UK).

The role of non-classical Cadherins in cell-cell recognition and sorting.

Members: Antonio Jacinto, Dulce Azevedo.

Students and Technicians: Sérgio Simões.

External Collaborators: James Castelli-Gair (CABD Seville, Spain).

Compartmentalisation of Rho regulators directs cell invagination during posterior spiracle formation.

Members: Antonio Jacinto

Students and Technicians: Sérgio Simões

External Collaborators: James Castelli-Gair (CABD Seville, Spain), Helen Skaer, (University of Cambridge, UK).

Genetic Screen for epithelial repair genes.

Members: Antonio Jacinto, Ana Catarina Sarzedas, Isabel Campos.

Students and Technicians: Jennifer Geiger, Vanessa Carlos.

PI3K regulates hemocytes chemotaxis to wounds in Drosophila.

Members: Antonio Jacinto, Will Wood.

Students and Technicians: Marco Antunes.

External Collaborators: Paul Martin (University of Bristol, UK).

Hox genes in the development of the axial skeleton. Members: Moisés Mallo.

Students and Technicians: Marta Carapuço, Tânia Vinagre, Ana Nóvoa, Joana Bom.

Hoxb4 in the proliferation of hematopoietic stem cells.

Members: Moisés Mallo, Leonor Parreira.

Students and Technicians: Ana Catarina Ribeiro.

The role of the antisense transcript of Hoxb3 in mouse development.

Members: Moisés Mallo.

Students and Technicians: Victoria Gallego, Ana Nóvoa, Joana Bom.

Development of the heart outflow tract and the role of Tbx1.

Members: Moisés Mallo.

Students and Technicians: Filipa Moraes, Ana Nóvoa, Joana Bom.

The role of Bmp2 in the early steps of neural crest development.

Members: Moisés Mallo. Students and Technicians: Catarina Correia, Marta Costa, Filipa Moraes.

Analysis of early transcriptional activation and germ-line segregation in Drosophila melanogaster.

Members: Rui Martinho.

Students and Technicians: Rui Tostões, Tânia Ferreira, Ana Rita Marques

External Collaborators: Jordi Casanova, Spain

Role of somatostatin during DRG chick embryo development.

Members: Paula Parra and Matthias Haury.

Students and Technicians: Duarte Viana, Nicolau Ferreira.

External Collaborators: Alfonso Fairen, Univ. Alicante, Spain.

Notch in hematopoiesis.

Members: Leonor Parreira, Isabel Alcobia, Andreia Gomes.

External Collaborators: Jacques Van Dongen and Frank Staal (Erasmus University, Rotterdam).

Role of the inhibitory Smad7 during limb development.

Members: Joaquín Rodríguez-León.

Students and Technicians: Carla Milagre.

External Collaborators: Yasuhiko Kawakami, Juan Carlos Izpisúa Belmonte (The Salk Institute for Biological Studies, La Jolla, CA, USA).

FGF signaling through Flrt3 co-receptor is responsible for AER integrity.

Members: Joaquín Rodríguez-León.

Students and Technicians: Ana Raquel Tomás.

The role of ion dynamics during vertebrate limb development.

Members: Joaquín Rodríguez-León, Ana Catarina Certal.

Students and Technicians: Margarida Santos, Ana Sofia Oliveira, Alexandre Rodrigues

External Collaborators: Alan Shipley (Applicable Electronics, USA), Joseph Kunkel (University of Massachusetts, USA), Juan Carlos Izpisúa Belmonte, (The Salk Institute for Biological Studies, La Jolla, CA, USA/The Center for Regenerative Medicine in Barcelona, Spain).

Role of FLRT3 in the regeneration of the caudal fin of adult zebrafish.

Members: Joaquín Rodríguez-León, António Jacinto, Nuno Afonso.

Students and Technicians: Mariana Simões.

External Collaborators: Juan Carlos Izpisúa Belmonte (The Salk Institute for Biological Studies, La Jolla, CA, USA).

Study on the role of terra in left-right determination.

Members: Leonor Saúde, Susana Lopes

Students and Technicians: Luís Pacheco.

External Collaborators: Gabriel Martins (FCUL/IGC, Portugal).

Identification of Terra-target genes in zebrafish.

Members: Leonor Saúde.

Students and Technicians: Raquel Lourenço, Lara Carvalho.

Define and compare cell migration patterns between the left and the right side of Hensen's node.

Members: Leonor Saúde.

Students and Technicians: Raquel Mendes.

External Collaborators: Gabriel Martins (FCUL/IGC, Portugal).

Characterisation and applications of a novel hemangioblast-specific transcriptional enhancer.

Members: Ana Teresa Tavares, Vera Teixeira, Joaquin Rodríguez Leon, Gabriel G. Martins.
Students and Technicians: Natacha Marreiros.

Vertebrate left-right asymmetry: analysis of the transcriptional regulation of chick Caronte during embryonic development.

Members: Ana Teresa Tavares, José António Belo.
Students and Technicians: Ana Cristina Silva, Mário Filipe, Sara Marques.

Myotome formation in the mouse: cell movements and cell-extracellular matrix interactions.

Members: Sólveig Thorsteinsdóttir, Gabriel G. Martins, Fernanda Bajanca.
Students and Technicians: Luís Marques, Ana Gaspar.
External Collaborators: Margaret Buckingham and Shahragim Tajbakhsh (Pasteur Institute, Paris, France); Arnoud Sonnenberg, (Netherlands Cancer Institute, Amsterdam, The Netherlands).

Integrating signals in morphogenesis: the case of somitogenesis in the chick.

Members: Sólveig Thorsteinsdóttir, Gabriela Rodrigues, Gabriel G. Martins.
Students and Technicians: Pedro Rifes, Pedro Campinho, Catarina Lopes, Rita Amândio.
External Collaborators: Isabel Palmeirim & Raquel Andrade, Escola das Ciências de Saúde, Universidade do Minho, Braga; Leonor Saúde, Instituto Gulbenkian de Ciência, Oeiras; António Jacinto, Instituto de Medicina Molecular, Faculdade de Medicina da Universidade de Lisboa, Lisboa; Anne-Gaelle Borycki, University of Sheffield, Sheffield, UK.

Cell Biology: Mitosis, Cytoskeleton and Stress

From a unifying evolutionary theory and a strong basis of cell and molecular biology, modern biological sciences reached unity in concepts, approaches even in semantics. Today, it makes little sense to separate the various “specialities” or areas of interest, as done here for reasons of commodity of the reader. A good example of this contention is the fact that this sector of the IGC's activities could well be “dissolved” in several others, or else, include various projects listed under other headings (Stress and Inflammation, Developmental Biology, etc.). Yet, this grouping aims at underlining that several apparently diverse interests converge in cytoskeleton structure, dynamics and functions.

Integrative Study on Centrosome Biogenesis and Function.

Members: Mónica Bettencourt-Dias, José Pereira-Leal.
Students and Technicians: Zita Santos.

Dissecting the Role of SAK Kinase in denovo and templated centriole biogenesis.

Members: Mónica Bettencourt-Dias.
Students and Technicians: Ana Rodrigues-Martins.

External Collaborators: David M Glover (University of Cambridge, UK), Giuliano Callaini (University of Siena, Italy).

The Role of D-SAS-6 in the regulation of centriole biogenesis.

Members: Mónica Bettencourt-Dias.

Students and Technicians: Ana Rodrigues-Martins, Claudia Ferreira.

External Collaborators: David M Glover (University of Cambridge, UK), Inês Ferreira (University of Cambridge, UK), Giuliano Callaini (University of Siena, Italy).

G2/M regulation by the polarity-related kinase Par-1.

Members: Mónica Bettencourt-Dias.

Students and Technicians: Claudia Ferreira.

External Collaborators: David M Glover (University of Cambridge, UK), Daniel St Johnston (University of Cambridge, UK) and Helene Doerflinger (University of Cambridge, UK).

Molecular cross talk between cell-cycle and apoptosis in cell fate decisions.

Member: Sukalyan Chatterjee.

Students: Mário Grãos, Ana Gírio, Ana Lucia Mena, Ana Alexandra Almeida.

Mechanism of activation by Yap1:-signaling through RNA polymerase II basal machinery.

Members: Lisete Fernandes.

Students and Technicians: Joana Monteiro.

Transactivator Yap1 crossroad of cold and oxidative stress signaling pathways in *Saccharomyces cerevisiae*.

Members: Lisete Fernandes.

Students and Technicians: Joana Monteiro, João Coelho.

Molecular mechanisms bridging protein folding and transcription activation.

Members: Lisete Fernandes.

Students and Technicians: João Coelho.

End-protection and DNA repair at *S. pombe* telomeres.

Members: Miguel Godinho-Ferreira, Clara Reis and Hugo Almeida.

Students and Technicians: Vanessa Borges, Sílvia Batista.

Remodelling of the actin cytoskeleton through actin capping proteins during epithelial morphogenesis in *Drosophila*.

Members: Florence Janody.

Students: Sofia Raquel Paulo Rebelo, Gaspar Pedro Miguel and Nuno Miguel Ribeiro Palha.

Study of the function and the regulation of tubulin cofactor A in mammalian cell lines and during mouse development.

Members: Helena Soares.

Students: Sofia Nolasco, João Gonçalves and Teresa Cruto.

External Collaborators: Juan Zabala (Facultad de Medicina, Departamento de Biología Molecular, Universidad de Cantabria, Spain) and Jesus Del Mazo (Centro de Investigaciones Biológicas-C.S.I.C., Madrid, Spain).

The role of the cytosolic chaperonin CCT and tubulin Cofactor E of the ciliate *Tetrahymena* in the assembly and dynamics of functional specialized microtubule structures.

Members: Helena Soares.

Students: Cecília Seixas and Miguel Coelho.

External Collaborators: Jacek Gaertig (Department of Cellular Biology, University of Georgia, Athens, USA), Luis Viseu Melo (Departamento de Física, Instituto Superior Técnico, Lisboa, Portugal).

The role of the cytoskeleton of the Apicomplexa *Besnoitia besnoiti* protozoa on the initial steps of host cell invasion.

Members: Helena Soares.

Students and Technicians: Yara Reis.

Internal Collaborators: Isabel Marques.

External Collaborators: Alexandre Leitão (Instituto de Investigação Científica Tropical, CIISA, Lisbon, Portugal), Helder Cortes, (Laboratório de Parasitologia. Núcleo da Mitra. Universidade de Évora, ICAM, Portugal), Luis Viseu Melo, (Departamento de Física, Instituto Superior Técnico, Lisbon, Portugal). Markus Meissner and Friedrich Frischknecht (Hygieneinstitut, Abteilung Parasitologie, UniversitätsKlinikum, Heidelberg, Germany).

Study of physical properties of microtubules by AFM techniques.

Members: Helena Soares.

Students: Ruben Ramalho and Pedro Sanches.

External Collaborators: Luis Viseu Melo (Departamento de Física, Instituto Superior Técnico, Lisbon, Portugal).

Defining the mitotic kinetochore structure in a higher eucariote *melanogaster*.

Member: Álvaro Tavares.

Students: Gonçalo Costa, Fátima Dias.

Collaborators: Ana Coelho (ITQB/UNL, Oeiras, Portugal). Peter Roepstorff (Dep Biochem Molecular Biology, Univ Southern Denmark, Odense, Denmark).

Characterization of the Mob1-like proteins in higher eucariotes.

Member: Álvaro Tavares.

Students: Claudia Florindo, Célia Domingues, Catarina Samora.

Collaborators: Jonathon Pines (CRC Cambridge, UK). Didier Fesquet (Centre de Recherche de Biochimie Macromoléculaire, CNRS, Montpellier, France). Rui Gomes, (Faculdade de Ciências de Lisboa, Lisboa, Portugal), Maria Arménia Carrondo, (ITQB/UNL, Oeiras, Portugal).

Study of mitotic kinases in *Drosophila melanogaster*.

Member: Álvaro Tavares.

Students: Susana Godinho, Mariana Silva, Lucia Mentelova.

Collaborators: David Glover, CRC Cambridge, UK. Rui Gomes, Faculdade de Ciências de Lisboa, Lisboa.

Inter-species cell-cell signalling in bacteria.

Members: Karina B. Xavier.

Students and Technicians: Catarina Sim-Sim Pereira.

Behavioral Neuroscience

Following a proposal that was supported by the Institute's Scientific Advisory Board, the Board of Trustees of the Gulbenkian Foundation approved a novel program in Neurosciences at the IGC. We aim at installing up to 5-6 groups, dedicated to studying the molecular, cellular and systemic bases of behavior in mice and rats. We expect that the practice of recent methods allowing for the in vivo recording of cellular activity, together with genetics manipulation on a solid basis of developmental and evolutionary biology will result in significant contributions, One wing of the Institute's building will soon be renewed and adapted to specific requirements for this work and the computational/theoretical sector of the IGC will also come to include groups in computational neurosciences.

The role of A kinase anchoring proteins in the regulation of synaptic activity.

Members: Marta Moita, Marija Spasikova, Rosalina Fonscea.

Students and Technicians: Marija Spasikova.

The role of the auditory cortex in associative learning.

Members: Marta Moita.

Students and Technicians: Raquel Antunes.

The role of the amygdala in trace fear conditioning.

Members: Marta Moita.

Students and Technicians: Marta Guimarães.

What are the rules governing synaptic plasticity in the amygdala?

Members: Marta Moita.

Students and Technicians: Patrícia Simões.

Prisoner's Dilemma in rats.

Members: Marta Moita.

Students and Technicians: Patrício Simões.

Theoretical and Computational Biology

Given the scientific interests of the IGC on “systems biology”, and our preference for organism-centered approaches, it makes sense to dedicate a significant fraction of the Institute's activity to the theory of complex systems and organisms. This is the objective of the Oeiras Advanced Studies (OAS): to provide theoretical, statistical and computational support to the empirical research at the Institute, conducting research on Mathematical and Computational Biology, and promoting this field in Portugal.

Molecular biology had a notorious success in identifying molecular components and mechanisms of relatively simple biological processes, providing molecular explanations for genetic or infectious diseases. Greater challenges are posed by complex systems and diseases, which involve the simultaneous interplay between many processes at molecular, cellular, individual, and populational levels. Developing new quantitative modeling frameworks that help bridging the gaps between these different levels of biological organisation is the agenda of mathematical and computational biology research at the OAS. One of our originalities resides in using mathematical models and simulation as tools for designing and analysing quantitative, bench experiments. Several such complementary research programs are carried out at the IGC. In immunology, they relate to signal transduction in lymphocytes, maturation of immune responses and lymphocyte population dynamics, notably, in diseases of the immune system. In evolutionary biology, mathematical modelling and experiments were combined to address, in simple systems using bacteria and plasmids, host-parasite co-evolution, emergence of antibiotic resistance, and the evolutionary forces responsible for the generation and maintenance of diversity in populations.

Functional genomics also combines computational and experimental biology, as it makes use of computation to extract novel information from the very extensive genomic and proteomic databases now available in a variety of living organisms. The IGC's agenda is to analyse genomes in search of unnoticed structural signatures of how biological systems operate, how diseases emerge, or how hosts and parasites co-evolve. Genome-scale technology creates statistical and computational problems on its own, as novel sources of biological information accumulate, notably with high-throughput screening methods, such as gene-chip technologies. Mathematical biology is also increasingly relevant to epidemiology, particularly to accurately represent the natural dynamics of recurrent and persistent infections, and to predict the impact of interventions. While attempting to derive quantitative frameworks, researchers at the IGC developed a strong, novel concept: reinfection threshold is a notion that was introduced in the quantification of pathogen transmission, and is gaining an increasing number of applications.

Nature, origin and dynamics of regulatory T cells.

Members: Jorge Carneiro, Jocelyne Demengeot, Rui Gardner, Marie-Louise Bergman, Kalet Leon.

Students and Technicians: Tiago Paixão.

Quantification of antigen-receptor diversity in lymphocyte populations.

Members: Jorge Carneiro, Rui Gardner.

Students and Technicians: Nuno Sepúlveda.

External Collaborators: Ana Cristina Espada de Sousa (IMM, Lisbon), Marilia Cascalho (Mayo-Clinic, USA).

Heterogeneity in cell populations.

Members: Jorge Carneiro.

Students and Technicians: Tiago Paixão and Nuno Sepúlveda.

Did Germinal Centres evolve under differential effects of diversity vs affinity?

Members: Jose Faro, Isabel Gordo.

Students and Technicians: Jaime Combadao.

An exploration of the evolutionary significance of the Germinal Centre Reaction.

Members: Jose Faro, Isabel Gordo, Jorge Carneiro.

External Collaborators: Paulo Campos (Universidade Federal Rural de Pernambuco, Brazil).

Reevaluating the Recycling Hypothesis in the Germinal Center.

Members: Jose Faro.

Students and Technicians: Joana Moreira.

Two possible mechanisms for the regulation of the Germinal Centre dynamics.

Members: Jose Faro.

Students and Technicians: Joana Moreira.

A new theoretical method to estimate the degree of overlap between the TcR repertoires of distinct murine T-cell (sub)populations.

Members: Jose Faro.

External Collaborators: Antonio Bandeira (Institut Pasteur, Paris, France); Emilio Faro (University of Vigo, Vigo, Spain).

Influence of CD25 Depletion in the Germinal Center Reaction after a Primary Immunization.

Members: José Faro, Margarida Souto-Carneiro.

Students and Technicians: Isabel Belo, Bruno Raposo, Maria João Lagareiro, Ana Água-Doce.

Criticality in epidemiology.

Members: Gabriela Gomes, Nico Stollenwerk, Frank Hilker, Natalia Mantilla-Beniers.

Students and Technicians: Paula Rodrigues, Ricardo Águas, Dinis Gökyaydin, Sander van Noort, Maíra Aguiar.

External Collaborators: Ana Nunes (CFTC FCUL); Lisa White (University of Warwick UK); Robert Snow (KEMRI Wellcome Kenya).

Pathogen Diversity in Disease Epidemiology.

Members: Gabriela Gomes, Isabel Gordo, Jean-Baptiste André, Marion Muehlen.

Students and Technicians: Sander van Noort, Dinis Gökyaydin.

External Collaborators: Viggo Andreasen (Roskilde University UK); Julia Gog, Olivier Restif

(Cambridge University UK); David Conway (MRC Gambia); Kevin Marsh, Pete Bull (KEMRI Wellcome Kenya).

Geographical heterogeneity of tuberculosis incidence in Portugal.

Members: Gabriela Gomes, Cristina Paulo.

Students and Technicians: Marta Lopes.

Internet-based surveillance of influenza.

Members: Gabriela Gomes, Cristina Paulo, Marion Muehlen, Vitor Faustino.

Students and Technicians: Sander van Noort, Dinis Gökyaydin, Loïc Lhopitallier, José Lourenço, Rita de Salles Caldeira, Paula Macedo, João Pita Costa.

External Collaborators: Carl Koppeschaar (De Grote Griepmeting The Netherlands); Helena Rebelo de Andrade, José Marinho Falcão (INSA); Mário Carreira (DGS); José Vítor Malheiros (Público); Alexandra Rebelo (Novis); Maria João Horta (CRIE/Ministério da Educação); Portuguese population.

Modelling biological control of mammal pest species in island ecosystems.

Members: Frank Hilker.

Students and Technicians: Nuno Oliveira.

External Collaborators: Kirsten Schmitz (University of Osnabrueck, Germany).

Evolution of protein complexes.

Members: José B. Pereira-Leal.

External Collaborators: Sarah Teichmann, Emmanuel Levy (RC Laboratory of Molecular Biology, Cambridge UK); Christelle Kamp (Imperial College, UK).

Evolution of protein interactions by gene duplication.

Members: José B. Pereira-Leal.

External Collaborators: Sarah Teichmann (MRC Laboratory of Molecular Biology, Cambridge UK).

Evolution of protein trafficking pathways in Fungi.

Members: José B. Pereira-Leal.

The role of domain insertions in the evolution of protein complexes.

Members: José B. Pereira-Leal.

Students and Technicians: Rita Rasteiro.

Ectopia

Ectopia is a laboratory hosting artists from different backgrounds interested in exploring the intersection of art and science. It fosters the development of collaborative projects involving artists and researchers. Ectopia provides resident artists access to the research being conducted at the Instituto Gulbenkian de Ciência a leading Portuguese biological research

institute. During the residency, the artists are exposed to the research through seminars and informal discussions with the scientists, being encouraged to develop collaborative projects. In addition, the researchers are also exposed to the artists and invited to take advantage of those collaborations in their scientific projects.

Decon: Deconstruction, Decontamination, Decomposition.

Members: Marta Menezes, Ines Nisa Rato, Rita Cachao, Maria Manuela Lopes.

RESEARCH CONTRACTS

The research activities at the IGC are supported to a significant level by the National Research Council (Fundação para a Ciência e a Tecnologia, FCT), but also by the European Union and by a few private corporations. All research contracts signed by the IGC that pertained, at least in part, to 2006 or later are listed below. The support from the FCT comes through various mechanisms, all awarded on the basis of competitive applications: (1) institutional support, as positions for scientists and technicians, in the frame of the Laboratório Associado ITQB/IBET/IGC; (2) institutional support, in the frame of the Unidade de Investigação FCT on “Tolerância Natural”; (3) individual support, as fellowships to visiting scientists, post-doctoral fellows, PhD students and technicians (these are indicated in the lists of people at the Institute); (4) group support, as research contracts (listed below); (5) sporadic support for the organization of scientific meetings, as indicated. We are pleased to acknowledge this support as it has become absolutely essential to the activities of the Institute.

FCT PROJECTS

POCTI/BIA-BCM/61270/2004

Jörg Becker

A comparative analysis of the Arabidopsis sperm cell transcriptome to decipher the role of the male gametes in double fertilization.

POCTI/MGI/46477/2002

Jorge Carneiro

Nature, population dynamics, and mechanism of action of regulatory CD25+ T cells: A biomathematical and experimental approach.

POCI/SAU-MMO/60333-2004

Jorge Carneiro/Ana Sousa

T cell production in HIV immunodeficiency.

POCTI/ CBO/47565/2002

Sukalyan Chatterjee

Transcriptional regulation of CD34 antigen in stem cells and its role in development.

POCI/SAU-MMO/58192/2004

Jocelyne Demengeot

Inflammatory components in the biology of regulatory T cells and autoimmune diseases prevention.

POCI/BIA-BDE/55758/2004

Francisco Dionisio

The role of the social interaction in bacterial diversity and evolution.

POCTI/CVT/56015/2004

António Duarte

Arteriogenesis identification of novel members of the Notch pathway involved in arterial cell fate determination.

POCTI/CVT/48766/2002

António Duarte

Use of transgenic conditional overexpression to address the function of a novel mammalian Delta homologue, mDII4.

POCTI/BCI/46453/2002

José Feijó

A genetic and molecular approach to the biophysics of cell-to cell communication during sexual reproduction in plants.

POCI/BIA-BCM/60046/2004

José Feijó

Comportamento oscilatório de tubos polínicos: mecanismos biofísicos e bioquímicos fundamentais de regulação do crescimento e morfogénese celular.

POCI/AGR/58320/2004

José Feijó

Large scale screen for genes important in production associated phenotypes in Vitis.

PDCT/BIA-BCM/55501/2004

Lisete Fernandes

Molecular mechanisms bridging protein folding and transcription activation.

POSI/SRI/47778/2002

Pedro Fernandes

BioGrid - Parallel Algorithms for Gene Annotation.

POCI/SAU-MMO/59913/2004

Constantin Fesel

Autoantibody repertoires and regulatory T-cells in human and murine lupus.

POCTI/MAT/58528/2004

Gabriela Gomes

Reinfection thresholds and the management of recurrent infections.

POCTI/MAT/47510/2002

Gabriela Gomes

Epidemiology and evolution of infectious diseases: influenza A and malaria.

POCTI/BSE/46856/2002

Isabel Gordo

Population genetics of adaptation in Escherichia coli.

POCI/SAU-MMO/55974/2004

Luís Graça

Tolerance induction in autoimmunity: reprogramming the immune system with monoclonal antibodies.

POCI/SAU/MMO/61652/2004

Matthias Haury

Regulation of IL10 Allelic Expression.

POCTI/BIO/46695/2002

Domingos Henrique

Expansion and Differentiation of Neural Stem Cells in Bioreactors with stirring.

POCTI/BCI/48577/2002

Antonio Jacinto

Cell-cell recognition and sorting during *Drosophila* morphogenesis.

POCTI/BIA-BCM/58389/2004

Antonio Jacinto

Inflammation and Chemotaxis in *Drosophila* embryos.

POCTI/MGI/46337/2002

Moisés Mallo

Reversible gene inactivation in the mouse.

POCTI/BIA-BCM/60420/2004

Moisés Mallo

The function of the antisense transcript of the *Hoxb3* gene during mouse development.

POCTI/SAU-MMO/60419/2004

Moisés Mallo

Hoxb4 in the formation of hematopoietic stem cells.

POCTI/BIA-BCM/61799/2004

Maria M. Mota

The role of *Plasmodium* molecules that migrate to the host cell nucleus during the Hepatocyte infection.

POCTI/SAU-MMO/60930/2004

Maria M. Mota

Functional genomics in malaria an unbiased RNAi screen to determine the required host cell molecules and pathways for *Plasmodium* sporozoite fully development inside hepatocytes.

POCTI/SAU-IMI/57946/2004

Maria M. Mota

The role of hemoxygenase-1 and its products in the course and pathology of a malaria infection.

POCTI/BIA-BCM/56938/2004

Marta Moita

Study of the role of A kinase anchoring proteins in the regulation of synaptic activity.

POCTI/SAU-NEU/56935/2004

Marta Moita

Study of the role of auditory cortex in associative learning.

POCI/SAU-MMO/58413/2004

Luisa Mota-Vieira

Study of genetic diversity of the Azorean population.

POCI 2010 Grant 010.6/A019/2005
Sofia Oliveira
GENOSTROKE: Stroke genomics.

POCTI/ SAU-NEU/56986/2004
Teresa Pais/Sukalyan Chatterjee
Papel da activação dos macrófagos do cérebro em modelos animais de doenças neurodegenerativas.

POCTI/SAU-MMO/59444/2004
Michael Parkhouse
Mecanismo e aplicação de um novo gene indutor de apoptose de Herpes Virus.

POCI/SAU/NEU/56627/2004
Paula Parra-Bueno
Role of somatostatin during DRG embryo development.

POCTI/MGI/44111/2002
Leonor Parreira
Delta1 and Jagged1 genes in normal hematopoietic differentiation.

POCI/SAU-MMO/62964/2004
Carlos Penha Gonçalves
Genetics of innate immune response in murine type 1 diabetes.

POCTI/SAU-MMO/57955/2004
Carlos Penha Gonçalves
Diabetes Tipo 1 : Immunopatology and genetic susceptibility.

POCTI/SAU-IMI/61057/2004
Carlos Penha Gonçalves
Genetic determinants of resistance to hepatic infection in murine malaria models.

POCTI/MGI/46719/2002
Sylviane Pied
A genomic and proteomic approach to study T lymphocytes, astroglial, microglial and endothelial cell interactions during malaria neuropathology.

POCTI/BCI/47972/2002
Joaquin Rodriguez-Leon/Juan Carlos Belmonte
Mechanisms of Regulation of nodal during left-right axis development.

POCI/SAU-MMO/63284/2004
Joaquín León
The cell biology and molecular basis of neural tube closure in the chick embryo.

POCTI/45914/BCI/2002
Leonor Saúde
Molecular and Cellular Characterization of Segmentation in the Chick Embryo.

POCTI/ESP/46378/2002

Pedro Simas

Transcriptome analysis of germinal centre B cells during gammaherpesvirus latent infection.

POCTI/BIA-BCM/60670/2004

Pedro Simas

Modulation of NF-kB transcriptional activity during gamma herpesvirus infection.

POCTI/SAU-IMI/57365/2004

Pedro Simas

Herpesvirus modulation of B-lymphocyte function.

POCTI/CTM/61622/2004

Helena Soares

MTube - Study of physical properties of microtubules by AFM techniques.

POCTI/SAU-MNO/56066/2004

Miguel P. Soares.

Modulation of atherosclerosis by the protective gene heme oxygenase-1: Molecular mechanisms and therapeutic applications.

POCTI/BIA-BCM/56829/2004

Miguel P. Soares

Molecular Mechanisms Underlying the Protective Effect of Heme Oxygenase- 1: Interaction with the NF-kappaB Signal Transduction Pathway.

POCTI/BSE/48402/2002

Elio Sucena

The molecular genetics of adaptation to octanoic acid in outbred populations of *D. melanogaster*.

POCI/DIV/2005/00236

Elio Sucena

Of maize and man: the story of corn.

POCTI/BIA-PRO/60337/2004

Álvaro Tavares

Characterisation of the mitotic checkpoint in *Drosophila*: function of the proteins Mps1 and CENP-ana.

POCTI/BME/46257/2002

Ana Teresa Tavares

Vertebrate left-right asymmetry: analysis of the transcriptional regulation of chick *Caronte* during embryonic development.

POCI/SAU-MMO/59725/2004

Ana Teresa Tavares

Characterisation and applications of a novel hemangioblast-specific transcriptional enhancer.

POCTI/BSE/48228/2002

Henrique Teotónio

Experimental evolution and the genetic basis of adaptation: analysis of candidate genes during reverse evolution.

POCI/BIA-BDE/61127/2004

Henrique Teotónio

The experimental evolution of outcrossing in populations of *Caenorhabditis elegans*.

PoCTI/BCI/47681/2002

Sólveig Thorsteinsdóttir

Myotome formation in the mouse: cell movements and cell-extracellular matrix interactions.

POCI/BIA-BCM/59201/2004

Sólveig Thorsteinsdóttir

Integrating signals in morphogenesis: the case of somitogenesis in the chick embryo.

POCTI/ESP/39636/2001

Astrid Moura Vicente

Genetic Epidemiology of Autism Spectrum Disorders.

POCTI/FCB/44706/2002

Astrid Moura Vicente

Pharmacogenetics of risperidone therapy in autism spectrum disorders.

EUROPEAN UNION PROJECTS

Marie Curie International Reintegration Grant 029143

Paula Duque

Alternative Splicing in Arabidopsis

MEXT-CT-2004-14338

Gabriela Gomes

Reinfection thresholds and the management of recurrent infections.

LSHG-CT-2003-503494

Domingos Henrique

FunGenES- Functional Genomics in Engineered ES cells.

LSHM-CT-2003-504468

António Jacinto/Joaquin Rodriguez-Leon/ Isabel Palmeirim/ Leonor Saude/ Solveig Thosteinsdottir.

Cells into Organs: Functional genomics for development and disease of mesodermal organ systems.

Marie Curie International Reintegration Grant 029165

Rui Martinho

Analysis of early transcriptional activation and germ-line segregation in *Drosophila melanogaster*.

EURYI Award, ESF

Maria M. Mota

The role of host cell factors in the full development of the malaria parasite inside hepatocytes.

MIRG-CT-2004-513760

Sofia Oliveira

Stroke genetics.

LSH-2005-1.2.5-1

Miguel P. Soares

Xenotransplantation studies in primates: a step towards clinical application.

CT.06.EPI.205.1.0

Nico Stollenwerk and Gabriela Gomes

Working group to develop mathematical and statistical models and analysis of protective factors for HIV infection among injecting drug users.

MRTN-CT-2004-512348 Research and Training Network

Álvaro Tavares

Spindle Dynamics.

Marie Curie International Reintegration Grant 031108

Karina Xavier

Inter-species cell-cell signalling in bacteria.

OTHER PROJECTS

Octapharma

Jocelyne Demengeot

ivlg therapy in SLE: regulating the regulators

APCL (Portuguese Association against Leukemia)

Sérgio Dias

Mechanisms involved in bone marrow recovery following radio or chemotherapy: a role for the vascular compartment

Fundação Calouste Gulbenkian

Sérgio Dias

cDNA Microarray Technology in Diagnosis and Monitoring for Oncology patients

Liga Portuguesa Contra o Cancro and Crioestaminal

Sérgio Dias

Mechanisms of Endothelial Differentiation from Endothelial Progenitors

Liga Portuguesa Contra o Cancro

Sérgio Dias

Angiogenesis in Leukemias and Myelodysplastic syndromes

Association for International Cancer Research, UK
Miguel Godinho-Ferreira
End-protection and DNA repair at *S. pombe* telomeres

Fundação Calouste Gulbenkian
Gabriela Gomes and Sander van Noort
Gripept.net Viagens de um vírus

Programa Operacional Sociedade do Conhecimento
Gabriela Gomes, Vítor Faustino, Paula Macedo, José Lourenço
Projecto Gripenet (website)

Direcção Geral de Saúde
Gabriela Gomes and Cristina Paulo
Heterogeneidade geográfica da incidência da tuberculose em Portugal

Associação Portuguesa Contra a Leucemia
Cristina João
Immune recovery after Autologous Stem Cell Transplantation - modulation by Ig and potential clinical application

Howard Hughes Medical Institute
Maria M. Mota
Functional genomics in malaria which are the host cell molecules and pathways required for Plasmodium development inside hepatocytes?

Gemi Fund, Linde Gas Therapeutics
Maria M. Mota
The role of CO during the course of a malaria infection

National Institutes of Health, Jeffery Vance, Duke University, USA
Sofia Oliveira
Parkinson's disease proteomics

Research Foundation Switzerland
Elisabetta Padovan
Adjuvanticity of microbial-derived particles and synthetic analogs in vitro

WelcomeTrust- African Swine Fever Virus
Michael Parkhouse
Development of African Swine Fever Virus vaccines

Liga Portuguesa Contra o Cancro - Terry Fox
Michael Parkhouse and Rute Nascimento
Elimination of a murine BCL1 lymphoma through specific antibody mediated delivery of liposomes containing MHV-68 gene VGAP mediating apoptosis

Medinfar
Carlos Penha Gonçalves
Influence of natural polyphenolic compounds on the pathogenesis course of type 1 diabetes

Phillip Morris External Research Program

Miguel P. Soares

Anti-atherogenic effect of inhaled carbon monoxide: Assessment of mechanism of action and potential therapeutic applications

PUBLICATIONS

Research articles

1. Afonso C. and Henrique D. PAR3 acts as a molecular organizer to define the apical domain of chick neuroepithelial cells. *J Cell Sci* (2006) 119:4293-4304.
2. Aguas R., Goncalves G. and Gomes M.G.M. Petrussis: increasing disease as a consequence of reducing transmission. *Lancet Infect Dis* (2006) 6:112-117.
3. Alves P.S., Godinho S.A. and Tavares A.A. The *Drosophila* orthologue of xPlkk1 is not essential for Polo activation and is necessary for proper contractile ring formation. *Exp Cell Res* (2006) 312:308-321.
4. Andre J-B. and Gandon S. Vaccination, within-host dynamics, and virulence evolution. *Evolution* (2006) 60:13-23.
5. Andre J-B. and Godelle B. Within-host evolution and virulence in microparasites. *J Theor Biol* (2006) 241:402-409.
6. Bajanca F., Luz M., Raymond K., Martins G.G., Sonnenberg A., Tajbakhsh S., Buckingham M. and Thorsteinsdottir S. Integrin $\alpha 6$ 1-laminin interactions regulate early myotome formation in the mouse embryo. *Development* (2006) 133:1635-1644.
7. Bleesing J.J., Souto-Carneiro M.M., Savage W.J., Brown M.R., Martinez C., Yavuz S., Brenner S., Siegel R.M., Horwitz M.E., Lipsky P.E., Malech H.L. and Fleisher T.A. Patients with chronic granulomatous disease have a reduced peripheral blood memory B cell compartment. *J Immunol* (2006) 176:7096-7103.
8. Bobes R.J., Hernandez M., Marquez C., Fragoso G., Garcia E., Parkhouse R.M., Harrison L.J., Sciutto E. and Fleury A. Subarachnoidal and intraventricular human neurocysticercosis: application of an antigen detection assay for the diagnosis and follow-up. *Trop Med Int Health* (2006) 11:943-950.
9. Borday C., Coutinho A., Germon I., Champagnat J. and Fortin G. Pre-/post-otic rhombomeric interactions control the emergence of a foetal-like respiratory rhythm in the mouse embryo. *J Neurobiol* (2006) 66:1285-1301.
10. Branco C.C., Palla R., Lino S., Pacheco P.R., Cabral R., De Fez L., Peixoto B.R. and Mota-Vieira L. Assessment of Azorean ancestry by Alu insertion polymorphism. *Am J Hum Biol* (2006) 18:223-226.
11. Budd M.E., Reis C.C., Smith S., Myung K. and Campbell J.L. Evidence suggesting that Pif1 helicase functions in DNA replication with the DNA2 helicase/nuclease and DNA polymerase delta. *Mol Cell Biol* (2006) 26:2490-2500.
12. Calado D.P., Paixao T., Holmberg D. And Haury M. Stochastic monoallelic expression of IL-10 in T Cells. *J Immunol* (2006) 177:5358-5364.

13. Campos P.R.A., Combadão J., Dionísio F. And Gordo I. Muller's ratchet in random graphs and scale-free networks. *Phys Rev E* (2006) 74:042901.
14. Carvalho S., Barrière A. and Pires da Silva A. The world of a worm: a framework for *Caenorhabditis* evolution. *EMBO Reports* (2006) 7:981-984.
15. Cohn M. What are the commonalities governing the behavior of humoral immune recognitive. *Dev Comp Immunol* (2006) 30:19-42.
16. Coma G., Pena R., Balnco J., Rosell A., Borrás F.E., Este J.A., Clotet B., Ruiz L., Parkhouse R.M.E. and Bofill M. Treatment of monocytes with interleukin (IL)-12 plus IL-18 stimulates survival, differentiation and production of CXC chemokine ligands (CXCL8, CXCL9 and CXCL10). *Clin Exp Immunol* (2006) 145:535-44.
17. Correia C., Coutinho A.M., Diogo L., Grazina M., Marques C., Miguel T.S., Ataíde A., Borges L., Oliveira C., Oliveira G. And Vicente A.M.. High frequency of biochemical markers for mitochondrial dysfunction in autism: no association with the mitochondrial aspartate/glutamate carrier SLC25A12 gene. *J Autism Dev Disorders* (2006) 36:1137-40.
18. Cortes H.C.E., Reis Y., Waap H., Vidal R., Soares H., Marques I., Pereira da Fonseca I., Fazendeiro I., Ferreira M.L., Caeiro V., Shkap V., Hemphill A. and Leitão A. Isolation of *Besnoitia besnoiti* from infected cattle in Portugal. *Vet Parasitol* (2006) 141:226-233.
19. Cunha-Rodrigues M., Prudencio M., Mota M.M. and Haas W. Antimalarial drugs host target (re) visited. *Biochem J* (2006) 1:321-332.
20. Cymbron T., Anjos R., Cabral R., Macedo C., Duarte C.P. and Mota-Vieira L. Epidemiological characterization of congenital heart disease in São Miguel Island, Azores, Portugal. *Community Genet* (2006) 9:107-112.
21. Day T., Andre J.B. and Park A. The evolutionary emergence of pandemic influenza. *Proc R S B-Biol Sci* (2006) 273:2945-2953.
22. De Faria J.P. and Fernandes L. Protection against oxidative stress through SUA7/TFIIB regulation in *Saccharomyces cerevisiae*. *Free Radical Biol Med* (2006) 41:1684-1693.
23. De Latour R.P., Dujardin H.C., Mishellany F., Burlen-Defranoux O., Zuber J., Marques R., Di Santo J., Cumano A., Vieira P. and bandeira A. Ontogeny, function, and peripheral homeostasis of regulatory T cells in the absence of interleukin-7. *Blood* (2006) 108:2300-2306.
24. Demengeot J., Zelenay S., Moraes-Fontes M.F., Caramalho I. and Coutinho A. Regulatory T cells in microbial infection. *Springer Semin Immunopathol* (2006) 28:41-50.
25. Deshpande P., Fesel C., Rajendra J., Cazenave P.A., Mishra G.C. and Pied S. Clusters of cytokines determine malaria severity in *Plasmodium falciparum*-infected patients from endemic areas of central India. *J Infect Dis* (2006) 194:198-207.

26. Dionisio F. and Gordo I. The tragedy of the commons, the public goods dilemma and the meaning of rivalry and excludability in evolutionary biology. *Evol Ecol Res* (2006) 8:321-332.
27. Faro J., Combadão J. and Gordo I. Did germinal centers evolve under differential effects of diversity vs affinity? *Lecture Notes in Computer Sci* (2006) 4163:1-8.
28. Filipe M., Gonçalves L., Bento M., Silva A.C. and Belo J.A. Comparative expression of mouse and chicken Shisa homologues during early development. *Dev Dyn* (2006) 235:2567-2573.
29. Fontoura P. and Steinman L. Nogo in multiple sclerosis: growing roles of a growth inhibitor. *J Neurol Sci* (2006) 245:201-210.
30. Fragoso R., Pereira T., Wu Y., Zhu Z., Cabeçadas J. And Dias S. "VEGFR-1 (FLT-1) activation modulates acute lymphoblastic leukemia localization and survival within the bone marrow, determining the onset of extramedullary disease". *Blood* (2006) 107:1608-1616.
31. Gardner R., Moradas-Ferreira P. and Salvador A. Why does superoxide dismutase overexpression often increase hydrogen peroxide concentrations? An alternative explanation. *J Theor Biol* (2006) 242:798-800.
32. Gil-da-Costa R., Braun A. and Martin A. Using PET H2015 brain imaging to study the functional-anatomical correlates of non-human primate communication. *Methods* (2006) 38:221-226.
33. Gil-da-Costa R. and Hauser M.D. Vervet monkeys and humans show brain asymmetries for processing conspecific vocalizations, but with opposite patterns of laterality. *Proc Royal Soc B-Biol Sci* (2006) 273:2313-2318.
34. Gil-da-Costa R., Martin A., Lopes A.M., Munoz M., Fritz J.B. and Braun A.R. Species-specific calls activate homologs of Broca's and Wernicke's areas in the macaque. *Nat Neurosc* (2006) 9:1064-1070.
35. Gonçalves G., Nascimento M.S., Reu C. And Cutts F.T. Levels of rubella antibody among vaccinated and unvaccinated Portuguese mothers and their newborns. *Vaccine* (2006) 24:7142-7147.
36. Gonzalez L.M., Villalobos N., Montero E., Morales J., Sanz R.A., Muro A., Harrison L.J.S., Parkhouse R.M.E. and Garate T. Differential molecular identification of Taeniid spp. and Sarcocystis spp. cysts isolated from infected pigs and cattle. *Vet Parasitol* (2006) 142:95-101.
37. Gordo I. and Campos P.R. Adaptive evolution in a spatially structured asexual population. *Genetica* (2006) 127:217-229.
38. Graça L., Daley S., Fairchild P.J., Cobbold S.P. and Waldmann H. Co-receptor and co-stimulation blockade for mixed chimerism and tolerance without myelosuppressive conditioning. *BMC Immunol* (2006) 7:Art.9.

39. Hilker F.M., Malchow H. Strange periodic attractors in a prey-predator system with infected prey. *Math Population Stud* (2006) 13:119-134.
40. Hilker F.M., Malchow H., Langlais M and Petrovskii S.V. Oscillations and waves in a virally infected plankton system: Part II: transmission from lysogeny to lysis. *Ecological Complexity* (2006) 3:200-208.
41. Hilker F.M. and Westerhoff F.H. The paradox of simple limiter control. *Physical Rev E* (2006) 73:Art. N° 052901.
42. Janody F. and Treisman J.E. Actin capping protein alpha maintains vestigial-expressing cells within the *Drosophila* wing disc epithelium. *Development* (2006) 133:3349-3357.
43. João C., Ogle B.M. and Geyer S. "Immunoglobulin promotes the diversity and the function of T cells". *Eur J Immunol* (2006) 36:1718-1728.
44. Jongco A.M., Ting L.M., Thathy V., Mota M.M. and Kim K. Improved tranfection and new selectable markers for the rodent malaria parasite *Plasmodium yoelii*. *Mol Biochem Parasitol* (2006) 146:242-250.
45. Kawakami Y., Rodriguez-Leon J. and Belmonte J.C. The role of TGFbetas and Sox9 during limb chondrogenesis. *Curr Opin Cell Biol* (2006) 18:723-729.
46. Koppen M., Garcia-Fernandez B., Carvalho L., Jacinto A. and Heisenberg C.P. Coordinated cell shape changes control epithelial movment in zebrafish and *Drosophila*. *Development* (2006) 133:2671-2681.
47. Leulier F., Ribeiro P.S., Palmer E., Tenev T., Takahashi K., Robertson D., Zachariou A., Pichaud F., Ueda R. and Meier P. Systemic in vivo RNAi analysis of putative components of the *Drosophila* cell death machinery. *Cell Death and Differentiation* (2006) 13:1663-1674.
48. Lovegrove B., Simões S., Rivas M.L., Sotillos S., Johnson K., knust E., Jacinto A. and Castelli-Gair Hombria J. Co-ordinated control of cell polarity and cytoskeleton underlies Hox induced organogenesis in *Drosophila*. *Curr Biol* (2006) 16:2206-2216.
49. Mallo M. Controlled gene activation and inactivation in the mouse. *Frontiers Biosciences* (2006) 11:313-327.
50. Mallo M. and Magli M.C. A look at life from the homeodomain. *EMBO Reports* (2006) 7:976-980.
51. Marquet R.L., Bartelds A.I.M., van Noort S.P., Koppeschaar C.E., Paget J., Schellevis F.G. and van der Zee J. Internet-based monitoring of influenza-like illness (ILI) in the general population of the Netherlands during the 2003-2004 influenza season. *BMC Public Health* (2006) 6:242.
52. Marsch-Martinez N., Greco R., Becker J.D., Dixit S., Bergervoet J.H.W., Karaba A., de Folter S. and Pereira A. BOLITA, an *Arabidopsis* AP2/ERF-like transcription factor that affects cell expansion and proliferation/differentiation pathways. *Plant Molec Biol* (2006) 62:825-843.

53. Monteiro M.C., Couceiro S. And Penha-Gonçalves C. The multigenic structure of the MHC locus contributes to positive selection efficiency: A role for MHC class II gen-specific restriction. *Eur J Immunol* (2006) 35:3622-3630.
54. Moreira J. and Faro J. Re-evaluating the recycling hypothesis in the germinal centre. *Immunol Cell Biol* (2006) 84:404-410.
55. Moreira J. and Faro J. Modelling two possible mechanisms for the regulation of the germinal centre dynamics. *J Immunol* (2006) 177:3705-3710.
56. Mota M.M. Be in motion.... *Mol Microbiol* (2006) 60:1327-1328.
57. Neves H., Weerkamp F., Gomes A.C., Naber B.A., Gameiro P., Becker J.D., Lucio P., Clode N., van Dongen J.J., Staal F.J. and Parreira L. Effects of Delta 1 and Jagged 1 on early human hematopoiesis: correlation with expression of Notch-signaling-related genes in CD34+ cells. *Stem Cells* (2006) 24:1328-1337.
58. Nitschke L., Lajaunias F., Moll T., Ho L., Martinez-Soria E., Kikuchi S., Santiago-Raber M-L., Dix C., Parkhouse R.M.E. and Izui S. Expression of aberrant forms of CD22 on B lymphocytes in CD22a Lupus-prone mice affects ligand binding. *Int Immunol* (2006) 18:59-68.
59. Nunes A., Telo da Gama M.M. and Gomes M.G.M. Localised contacts between hosts reduce pathogen diversity. *J Theor Biol* (2006) 241:477-487.
60. Oliveira V., Agua-Doce A., Duarte J., Soares M.P. and Graca L. Regulatory T cell maintenance of dominant tolerance: Induction of tissue self-defense? *Transplant Immunol* (2006) 17:7-10.
61. Paes de Faria J. and Fernandes L. Protection against oxidative stress through SUA7/TFIIB regulation in *Saccharomyces cerevisiae*. *Free Radic Biol Med* (2006) 41:1684-1693.
62. Parker M.J., Gomes M.G.M. and Stewart I.N. Forced symmetry-breaking of square lattice planforms. *J Dyn Diff Equations* (2006) 18:223-255.
63. Pearson J., Godinho S., Tavares, A.A. and Glover D.M. Heterologous expression of mammalian Plk1 in *Drosophila* reveals divergence from Polo during late mitosis. *Exp Cell Res* (2006) 312:770-781.
64. Pereira C.S., Soares G.A.M, Oliveira A.C., Rosa M.E., Pereira H., Moreno N. and San Romão M.V. Effect of fungal colonization on mechanical performance of cork. *Int Biodeterioration and Biodegradation* (2006) 57:244-250.
65. Perfeito L., Gordo I. and Campos P.R.A. The effect of spatial structure in adaptive evolution. *Eur Physical J B* (2006) 51:301-306.
66. Prakash D., Fesel C. Jain R., Cazenave P.A., Mishra G.C. and Pied S. Clusters of cytokines determine malaria severity in *Plasmodium falciparum*-infected patients from endemic areas of central India. *J Infect Dis* (2006) 194:198-207.

67. Prudencio M., Rodriguez A. and Mota M.M. The silent path to thousands of merozoites: the Plasmodium liver stage. *Nat Rev Microbiol* (2006) 4:849-856
68. Reis Y., Cortes H., Viseu melo L., Fazendeiro I., Leitao A. and Soares H. Microtubule cytoskeleton behaviour in the initial steps of host cell invasion by *Besnoitia besnoiti*. *FEBS Lett* (2006) 580:4673-4682.
69. Ribeiro M.J., Silva Pereira C., Soares N., Vieira A.M., Feijo J.A. and Jackson P. The contribution of extensin network formation to peroxide-mediated increases in cell wall resistance to fungal, lytic enzymes. *J Exp Bot* (2006) 57:2025-2035.
70. Rodo J., Goncalves L.A., Demengeot J., Coutinho A. and Penha-Goncalves C. MHC class II molecules control murine B cell responsiveness to lipopolysaccharide stimulation. *J Immunol* (2006) 177:4620-4626.
71. Rodrigues L., Pires de Miranda M., Caloca M.J., Bustelo X.R. and Simas J.P. Activation of Vav by gamma herpesvirus M2 protein contributes to the establishment of viral latency in B lymphocytes. *J Virol* (2006) 80:6123-6135.
72. Rodrigues S., Santos J. and Palmeirim I. Molecular characterization of the rostral-most somites in early somitic stages of the chick embryo. *Gene Expr Patterns* (2006) 6:673-677.
73. Salgueiro A.M., filipe M. And belo J.A. N-acetylgalactosamine 4-sulfate 6-O-sulfotransferase expression during early mouse embryonic development. *Int J Dev Biol* (2006) 50:705-708.
74. Seo S., Fujita H., Nakano A., Kang M., Duarte A. and Kume T. The forkhead transcription factors, *Foxc1* and *Foxc2*, are required for arterial specification and lymphatic sprouting during vascular development. *Dev Biol* (2006) 294:458-70.
75. Silva A.C., Filipe M., Vitorino M., Steinbeisser H. and Belo J.A. Developmental expression of *Shisa-2* in *Xenopus laevis*. *Int J Dev Biol* (2006) 50:575-579.
76. Silva G., Cunha A., Gregoire I.P., Seldon M.P. and Soares M.P. The anti-apoptotic effect of heme oxygenase-1 (HO-1) in endothelial cells involves the degradation of p38 mitogen activated protein kinase (MAPK) isoform. *J Immunol* (2006) 177:1894-1903.
77. Simoes S., Denholm B., Azevedo D., Sotillos S., Martin P., Skaer H., Castelli-Gair H. and Jacinto A. Compartmentalisation of Rho regulators directs cell invagination during tissue morphogenesis. *Development* (2006) 133:4257-4267.
78. Teixeira M.C., Fernandes A.R., Mira N.P., Becker J.D. and Sa-Correia I. Early transcriptional response of *Saccharomyces cerevisiae* to stress imposed by the herbicide 2,4-dichlorophenoxyacetic acid. *FEMS Yeast Res* (2006) 6:230-248.
79. Teotonio H., Manoel D. and Phillips P.C. Genetic variation for outcrossing among *Caenorhabditis elegans* isolates. *Evolution* (2006) 60:1300-1305.
80. Wood W., Faria C. and Jacinto A. Distinct mechanisms regulate hemocyte chemotaxis during development and wound healing in *Drosophila melanogaster*. *J Cell Biol* (2006) 173:405-416.

81. Yamashita K., Ollinger R., McDaid J., Sakahama H., Wang H., Tyagi S., Csizmadia E., Smith N.R., Soares M. and Bach F.H. Heme oxygenase-1 is essential for and promotes tolerance to transplanted organs. *FASEB J* (2006) 20:776-778.
82. Zelenay S. and Demengeot J. Comment on cutting edge: Anti-CD25 monoclonal antibody injection results in the functional inactivation, not depletion, of CD4+CD25+ T regulatory cells". *J Immunol* (2006) 177:2036-2037.

Articles in press

1. Casalou C., Fragoso R., Moura Nunes J.F. and Dias S. VEGF/PLGF induces leukemia cell migration via P38/ERK1/2 kinase pathway, resulting in Rho GTPases activation and caveolae formation. *Leukemia*.
2. Carneiro J., Leon K., Caramalho I., van den Dool C., Gardner R., Oliveira V., Bergman M.-L., Sepúlveda N., Paixão T., Faro, J., and Demengeot J. When three is not a crowd: A crossregulation model of the dynamics and repertoire selection of regulatory CD4 T cells. *Immunol. Rev.*
3. Cohn M. Does the signal for the activation of T cells originate from the antigen-presenting cell or the effector T-helper? *Cellular Immunol.*
4. Coutinho A.M., Oliveira G., Katz C., Feng J., Yan J., Yang C., Marques C., Ataíde A.S., Miguel T., Borges L., Almeida J., Currais A., Bento C., Mota-Vieira L., Temudo T., Santos M., Maciel P., Sommer S.S. and Vicente A.M. MECP2 coding sequence and 3'UTR variation in 172 unrelated autistic patients. *Am J Med Genet Neuropsychiatric Genet.*
5. Cunha-Rodrigues M., Portugal S., Febbraio M. and Mota M.M. Infection by and protective immune responses against *Plasmodium berghei* ANKA are not affected in macrophage scavenger receptors A deficient mice. *BMC Microbiol.*
6. Dionisio F. and Gordo I. Controlling excludability in the evolution of cooperation. *Evol Ecol Res.*
7. Fragoso R., Elias A.P. and Dias S. Autocrine VEGF loops, signalling pathways and acute leukemia regulation. *Leukemia and Lymphoma.*
8. Gomes M.G.M., Rodrigues P., Hilker F.M., Mantilla-Beniers N.B., Muehlen M., Paulo A.C.A.S., Medley G.F. The potential of post-exposure interventions in global tuberculosis control. *J Theor Biol.*
9. Graça L., Silva-Santos B. And Coutinho A. The blind-spot of regulatory T cells. *Eur J Immunol.*
10. Hilker F.M. and Malchow H. Strange periodic attractors in a prey-predator system with infected prey. *Mathematical Population Studies.*
11. Hilker F.M., Hinsch M. and Poethke H.J. Parameterizing, evaluating and comparing metapopulation models with data from individual-based simulations. *Ecol Model.*

12. Lahiri D., James R., Dutton J.R., Duarte A., Moorwood K., Graham C.F. and Ward A. Nephropathy and defective spermatogenesis in mice transgenic for a single isoform of the Wilms' tumour suppressor protein, WT1-KTS, together with one disrupted Wt1 Allele. *Molec Reprod Dev*.
13. Malchow H. and Hilker F.M. Pattern formation in models of nonlinear plankton dynamics: a minireview. *Theorie in der Okologie*.
14. Milutinovic D., Carneiro J., Athans M., and Lima P. Modeling Dynamics of Cell Population Molecule Expression Distribution. *J Hybrid Syst Applications*.
15. Montero E., Gonzalez L.M., Bonay P., Rosas G., Hernandez B., Sciutto E., Parkhouse R.M.E., Harrison L.J.S., Morales A.M. and Garate T. *Taenia solium*: Identification and preliminary characterization of a lipid binding protein with homology to the SEC14 catalytic domain. *Exp Parasitol*.
16. Parker M.J., Gomes M.G.M., Stewart I.N. Partial classification of heteroclinic behaviour associated with the perturbation of hexagonal planforms. *Dyn Syst*.
17. Ramalho R.R., Soares H. and Melo L.V. Microtubule behavior under strong electromagnetic fields. *Mater Sci Eng C* (2006).
18. Reis C.C. and Campbell J.L. Contribution of Trf4/5 and the nuclear exosome to genome stability through regulation of histone mRNA levels in *Saccharomyces cerevisiae*. *Genetics* (2006).
19. White L.J., Mandl J.N., Gomes M.G.M., Bodley-Tickell A.T., Cane P.A., Perez-Brena P., Aguilar J.C., Siqueira M.M., Portes, S.A., Straliootto S.M., Waris M., Nokes D.J. and Medley G.F. Understanding the transmission dynamics of respiratory syncytial virus using multiple time series and nested models. *Math Biosci*.

Other articles and chapters in books

1. Bersiniand H. and Carneiro J (Eds). *Artificial Immune Systems. Lecture Notes In Computer Science 4163.. Springer-Verlag. 460 Pages*.
2. Chuva de Sousa Lopes S.M., Mummery C.L. and Thorsteinsdóttir S. *Implantation In: Cell Signalling and growth factors in development, Eds. K. Unsicker and K. Krieglstein, Wiley-VCH publ. (2006) 73-105*.
3. Cohn M. *Conceptualizing the self-nonsel self discrimination by the vertebrate immune system. In: Silico Immunology, Eds. J. Timmis and D.F. Flower, SpringerScience publ. (2006) 386-407*.
4. Faro J., Combadão J. and Gordo I. *Did germinal centers evolve under differential effects of diversity vs affinity. In: Atificial immune systems, Eds. H. Bersini and J. Carneiro, Springer publ. (2006) 1-8*.

5. Moreno N., Bougourd S., Haseloff J. and Feijó J.A. Imaging plant cells. In: Handbook of Confocal Microscopy, Ed. J. Pawley, SpringerScience publ. (2006) 769-787.
6. Pereira S.S. and Xavier K.B. A Linguagem das Bactérias. Boletim de Biotecnologia (2006) 83:22-32.

Other articles and chapters in books in press

1. Broutin H., Mantilla-Beniens N.B., Rohani P. Ecology of infectious diseases: an example with two vaccine-preventable diseases, in Encyclopedia of Infectious Diseases (Tibayren M Ed.) Wiley.
2. Gonçalves G. Incerteza e riscos em epidemiologia e saúde pública. In: Encontro de saberes Três gerações de bolsistas da Gulbenkian, Eds. E.R. de Arantes e Oliveira, J.M. Pinto Paixão and P.Magalhães, Fundação Calouste Gulbenkian publ.
3. Kundel J.G., Cordeiro S., Xu J., Shipley A.M. and Feijó J.A. The use of non-invasive ion-selective microelectrode techniques for the study of plant development. In: Plant electrophysiology Theory and methods, Ed. V. Volkov.
4. Lopes da Costa L., Duarte A.F and Robalo Silva J. Biotechnology of reproduction and development: from the biomedical model to enterprise innovation. In: A portrait of state of the art research at the Technical University of Lisbon, Ed. M. Seabra Pereira, Springer Science publ.
5. Pereira-Leal J.B. Book Review: Modularity of Natural Complex Systems Acta Biotheoretica.
6. Stollenwerk N., Mikolajczyk R. Algorithm for parameter estimation in nosocomial infection.
7. Stollenwerk N., Jansen V.A.A. Criticality in epidemiology (eds. Blasius B, Stone L, Kurths J) World Scientific.
8. Teotónio H., Rose M.R., and Proulx S. Phenotypic plasticity and evolvability: an empirical test with experimental evolution. In: Insect Phenotypic Plasticity, eds. D. Whitman and TN Ananthakrishnan. Science Publishers, Inc. Plymouth, UK.

Articles in 2007

1. André J.-B. and Day T. Perfect reciprocity is the only evolutionary stable strategy in the continuous iterated prisoner's dilemma. J Theor Biol (2007).
2. Carneiro-Sampaio M., and Coutinho A. Immunity to microbes: Lessons from primary immunodeficiencies, Infection Immun (2007).
3. Carneiro-Sampaio M., and Coutinho A. Tolerance and autoimmunity: lessons at the bedside of primary immunodeficiencies. Advances Immunol (2007)

4. Chora A.A., Fontoura P., Cunha A., Pais T.F., Cardoso S., Ho P.P., Lee L.Y., Sobel R.A., Steinman L. And Soares M.P. Heme oxygenase-1 and carbon monoxide suppress autoimmune neuroinflammation. *J Clin Invest* (2007) 117:438-447.
5. Coutinho A.M., Sousa I., Oliveira G., Morgadinho T., Fesel C., Macedo T., Bento C., Marques C., Ataíde A.S., Miguel T., Borges L. and Vicente A.M. Evidence for epistasis in the determination of platelet serotonin levels and in autism etiology. *Hum Genet* (2007).
6. Duarte J., Deshpande P., Guiyedi V., Mecheri S., Fesel C., Cazenave p.A., Mishra G.C., Kombila M. And Pied S. Total and functional parasite specific IgE responses on *Plasmodium falciparum*-infected patients exhibiting different clinical status. *Malaria J* (2007).
7. Ferreira, M.G. Telomeres on the Cdk roller coaster ride, *Nat Cell Biol* (2007) 9:22-23.
8. Ferrer E., Bonay P., Foster-Cuevas M., González L.M., Dávila I., Cortéz M.M., Harrison L.J.S., Parkhouse R.M.E. and Gárate T. "Molecular cloning and characterisation of Ts8B1, Ts8B2 and Ts8B3, three new members of the *Taenia solium* metacestode 8 kDa diagnostic antigen family. *Mol Biochem Parasitol* (2007) 152:90-100.
9. Gonzalez L.M., Bonay P., Benitez L., Ferrer E., Harrison L.J.S., Parkhouse R.M.E. and Garate T. Molecular and functional characterization of a *Taenia* adhesion gene family (TAF) encoding potential protective antigens of *Taenia saginata* oncospheres. *Parasitol Res* (2007) 100:519-528.
10. Gokaydin D., Oliveira-Martins J.B., Gordo I. and M.G.M. Gomes. The reinfection threshold regulates pathogen diversity: the case of influenza. *J R Soc interface* (2007) 4:137-142.
11. Guiyedi V., Chanseaud Y., Fesel C., Snounou G., Rousselle J.-C., Lim P., Koko J., Namane A., Cazenave P.-A., Kombila M. and Pied S. Self-reactivities to the non-erythroid alpha spectrin correlate with cerebral malaria in Gabonese children. *PLoSOne* (2007).
12. Hilker F.M. and Westerhoff F.H. Triggering crashes in chaotic dynamics. *Physics Lett A* (2007) 362:407-411.
13. Hilker F.M., Langlais M., Petrovskii S.V. and Malchow H. A diffusive SI model with Allee effect and application to FIV. *Math Biosci* (2007) 206:61-80.
14. Hilker F.M. and Westerhoff F.H. Preventing extinction and outbreaks in chaotic populations. *Am Naturalist* (2007).
15. João C. Immunoglobulin is a highly diverse self-molecule that improves cellular diversity and function during immune reconstitution. *Med Hypotheses* (2007) 68:158-161.
16. Manoel D., Carvalho S., Phillips P.C. and Teotónio H. Selection against males in *Caenorhabditis elegans*. *Proc Royal Soc B* (2007) 274:417-424.
17. Moreno N., Colaço R. and Feijó J.A. The pollen tube oscillator: integrating biophysics and biochemistry into cellular growth and morphogenesis. In: *Rhythms in plants: phenomenology, mechanisms, and adaptive significance*. Eds. S. Mancuso and S. Shabala, Springer-Verlag, Berlin, Heidelberg publ (2007).

18. Nascimento R. and Parkhouse R.M.E. Murine gammaherpesvirus 68 open reading frame 20 induces cell cycle arrest in G2 by inhibiting the Cdc2/cyclin B complex. *J Gen Virol* (2007).
19. Pinho M.S. and Gulbenkian S. Peptidergic innervation of the canine mammary gland: an immunohistochemical study. *Histol Histopathol* (2007).
20. Rodrigues P., Gomes M.G.M. and Rebelo C. Drug-resistance in tuberculosis a reinfection model. *Theor Pop Biol* (2007) 71:196-212.
21. Tavares A.N., Andrade S., Silva A.C. and Belo J.A. Cerberus is a feedback inhibitor of Nodal asymmetric signalling in the chick embryo. *Development* (2007).
22. Trovoada M.J., Tavares L., Gusmão L., Alves C., Abade A., Amorim A. and Prata M.J. Dissecting the genetic history of São Tomé e Príncipe: a new window from Y-chromosome biallelic markers. *Annals Hum Genet* (2007) 71:77-85.
23. Vigário A.M., Gorgette O., Dujardin H.C., Cruz T., Cazenave P.-A., Adrien Six, Bandeira A., and Pied S. Regulatory CD4+ T cells expand during experimental Plasmodium infection but do not prevent cerebral malaria. *Int J Parasitol* (2007).
24. Xavier K.B., Miller S.T., Lu W., Kim J.H., Rabinowitz J., Pelczer I., Semmerlhack M.F. and Blassler B.L. Phosphorylation and processing of the quorum-sensing molecule autoinducer-2 in enteric bacteria. *ACS Chem Biol* (2007) 2:128-136.
25. Zelenay S., Chora A., Soares M.P. and Demengeot J. Heme oxygenase-1 is not required for mouse regulatory T cell development and function. *Int Immunol* (2007) 19:11-8.

SEMINARS AT THE IGC

January

Susana Lopes (IGC)

How to make shady fish shine - a positional cloning project.

Nicolas Malmanche (IBMC, Porto, Portugal)

BubR1 affects meiotic pairing and egg polarity during *Drosophila* oogenesis.

Sukalyan Chatterjee (IGC)

Cross talk between neurons & microglia under stress.

Luís do Rosário (Instituto do Coração, Lisbon, Portugal)

Myocardial regeneration: from bench to bedside.

Miguel Soares (IGC)

Targeting Heme Oxygenase-1 to overcome the deleterious effects of inflammatory and immune responses.

Jocelyne Demengeot (IGC)

A wander into the origin of immune regulation.

February

Rui Oliveira (ISPA, Lisbon, Portugal)

Androgens, social context and behaviour.

José Pereira-Leal (IGC)

Evolution of protein interactions and the origins of protein complexes.

Massimo Delledonne (University Studi Verona, Italy)

Signaling through the plant hypersensitive disease resistance response? NO way!

Joaquin Rodriguez-Leon (IGC)

Left, right, chicks and limbs. Organogenesis in Oeiras.

Nelson Vaz (UFMG, Belo Horizonte, Brazil)

The natural drift of the immune system.

Johann Truccolo (IGC)

Differential transcriptional analyses to study genes involved in brain cell interactions during cerebral malaria.

Linda Dixon (Institute for Animal Health, Pirbright Lab., UK)

Evasion of host by African Swine fever virus.

March

Fabienne Willems (Inst. for Medical Immunology, Univ. Libre de Bruxelles, Belgium)
Properties of dendritic cells in human newborns.

Monica Sousa (IBMC, Porto, Portugal)
New Functions for an old Transporter.

Michael Parkhouse (IGC)
Host-Pathogen interaction: a reciprocal two edged sword.

Shohei Hori (Riken Institute, Japan)
How Foxp3 controls dominant tolerance: lessons from IPEX mutations.

Warren Pear (Univ. of Pennsylvania, Abramson Family Cancer Research Inst., USA)
Notch signaling at the crossroads of normal hematopoietic development and leukemia.

Sérgio Dias (IPO, Lisbon, Portugal/IGC)
VEGF in normal and malignant bone marrow.

Ralf Adams (London Research Inst., UK)
Regulation of cell adhesion and migration during blood vessel morphogenesis.

Moisés Mallo (IGC)
The Hox Blog.

Julia Gog (Univ. Cambridge, UK)
Regions of low codon diversity in the influenza virus genome define potential RNA packaging signals.

Thomas Lecuit (Univ. Méditerranée, France)
Regulation of cell surface mechanics underlying tissue morphogenesis.

April

Frank Hilker (IGC)
Modelling infectious diseases in animal populations.

Matthew Albert (INSERM, Inst. Pasteur, France)
The two faces of type I interferons-from Hepatitis C pathogenesis to the modulation of dendritic cell immunobiology.

Santiago Schnell (Indiana University School of Informatics, USA)
A clock and wavefront mechanism for somite formation
Systems Biology.

Claudio Struchiner (Fundação Oswaldo Cruz, Brazil)
Genetic control of vector-borne diseases.

Célia Domingues (IGC)

DMob4 is a centrosomal protein implicated in tumour suppression and in kinase activation.

Freddy Radtke (Ludwig Inst. for Cancer Research, Switzerland)

Notch: lineage specifier, progenitor gate keeper, oncogene and tumor suppressor?

Simon Geir Møller (Univ. of Stavanger, Norway)

Plastid division and Fe-S cluster biogenesis in plants.

May

Torsten Bossing (Gurdon Institute, Wellcome Trust/cancer Research, UK)

Cellular regeneration in the Drosophila embryonic CNS.

Zach Mainen (Cold Spring Harbor Laboratory, USA)

Neural mechanisms underlying rapid perceptual decisions.

Leonor Cancela (CCMAR, Univ. Algarve, Portugal)

Vitamin K dependent proteins and tissue mineralization in fish.

Joana Monteiro and Lisete Fernandes (IGC)

OS-signaling in transcription regulation: new target(s) and old target(s) with new function(s).

Margaret Pericak-Vance (Center for Human Genetics, Duke Univ., USA)

Dissecting the complex genetics of autism.

Jeffery Vance (Center for Human Genetics, Duke Univ., USA)

Genes and Parkinson disease. Insights into the mechanisms of disease.

Miguel Godinho Ferreira (IGC)

Living at the edge of the chromosome. The fate of dysfunctional telomeres through the cell cycle.

Axel Behrens (London Research Inst., UK)

Mechanisms of transcriptional regulation during neurodegeneration and cancer.

Patrick Phillips (Univ. of Oregon, Eugene, USA)

The evolution of genetic architecture.

Jean-Baptiste André (IGC)

Evolutionary biology of microbial pathogens. Some theoretical approaches on mutation rate, emerging diseases and virulence.

Admar Verschoor (UniversitätsSpital Zürich, Institut für Experimentelle Immunologie, Germany)

Detection of antigen trafficking in vivo by multi-photon microscopy.

Karina Xavier (IGC)

Inter-species communication in Bacteria.

June

Albert Goldbeter (Université Libre de Bruxelles, Belgium)
Modeling circadian rhythms: from molecular mechanism to physiological disorders.

Marina Botto (Imperial College, London, UK)
Complement deficiency and autoimmunity: insights from knockout mice.

João Pedro Simas (IMM, Lisbon, Portugal/IGC)
g-herpesviruses modulation of B-lymphocyte Function.

Robert Sablowski (John Innes Centre, UK)
Parallels between plant and animal stem cells.

Joel Rosenbaum (Yale Univ., New Haven, Connecticut, USA)
Intraflagellar transport (IFT), a motility process required for assembly and maintenance of cilia and flagella: implications for cilia-dependent disease.

Douglas Golenbock (University of Massachusetts, Medical School, USA)
Toll receptors; pathophysiology of sepsis.

Élio Sucena (IGC)
Aspects of variability and robustness in *Drosophila* development.

Serena Dudek (Lab. of Neurobiolog, National Inst.Environmental Health Sciences, North Carolina, USA)
The late-phase of hippocampal long-term potentiation: getting to the nucleus.

Hans Meinhardt (Max Planck Institut Entwicklungsbiologie, Tübingen, Germany)
Models of biological pattern formation: from elementary steps to the generation of embryonic body axis.

Pierre Baldi (Univ.California, Irvine, USA)
Charting chemical space with computers, challenges and opportunities for AI and machine learning.

Jesús M. Salvador (CSIC, Madrid, Spain)
Alternative p38 activation pathway in T cell signaling.

Paula Duque (IGC)
Alternative splicing in plant development and stress responses.

Bruno Silva-Santos (FML, Lisbon, Portugal)
Thymic adventures of T Cells-to-be.

July

Marta Moita (IGC)
Neural basis of associative learning: Mechanisms underlying the association of stimuli separate in time.

Francisco Dionísio (IGC)
Phage induction and host-parasite evolution.

Shawn Bailey (Concordia Univ., Montreal, Canada/ Symbiotica Univ. of Western Australia, Perth, Australia)
BIOTEKNICA, Laboratory Notes.

Gareth Griffiths (European Molecular Biology Laboratory, Heidelberg, Germany)
From actin assembly by phagosomal membranes to the killing of Mycobacteria.

Christine Vogel (Univ. of Texas at Austin, USA)
Insights into transcriptional and translational regulation by absolute protein expression profiling
Inst. for Cellular and Molecular Biology.

Will Wood (IMM, Lisbon, Portugal/IGC)
Hemocyte migration and chemotaxis in the Drosophila embryo.

Jose Luis de la Pompa (CNB, Madrid, Spain)
Notch signaling in vertebrate cardiac development and homeostasis.

Rui Martinho (IGC)
Drosophila blastoderm cellularization: a case study of cellular multitasking.

Jacqueline Deschamps (Hubrecht Laboratory, Utrecht, The Netherlands)
Genetics of axial elongation and patterning in the mouse.

August

Ihsan Gursel (Molecular Biology and genetics Department, Science Faculty, Bilkent Univ., Ankara, Turkey)
TLR9 Agonists and Antagonists: potential immunotherapeutic applications.

Isabel dos Santos Silva (London School of Hygiene and Tropical Medicine, London, UK)
The causes of breast cancer: nature, nurture or bad luck?

September

José Feijó (FCUL, Lisbon, Portugal/IGC)
The Cellular basis of apical cell growth and morphogenesis.

Ricardo Gil da Costa (NIMH, National Institutes of Health, USA/IGC)
Toward an evolutionary perspective on the behavioral and neural basis for conceptual representation and evolution of language in primates
Lab. of Brain and Cognition,

Carlos Penha-Gonçalves (IGC)
Genes&disease@carlos.igc.

Nam-Hai Chua (The Rockefeller University, USA)
Engineering virus resistance by expression of artificial miRNAs and mechanisms of action of the CMV 2b gene silencing suppressor

Wilson Savino (Fundação Oswaldo Cruz, Rio de Janeiro, Brazil)
All about Fiocruz

Isabel Gordo (IGC)
Patterns of genetic variation in pathogen populations.

Mathias Koepen (Max Planck, Dresden, Germany)
Mechanisms of epithelial movement in zebrafish.

Marta Menezes (IGC)
Ectopia, what are these artists doing in IGC?

Steven Neill (Center for Research in Plant Science, University of the West of England, Bristol, UK)
Nitric oxide: a component of gravity signal transduction in plants?

Austin Smith (Institute for Stem Cell Research, UK)
Unravelling pluripotency and lineage restriction in mammalian stem cells.

Philippe Bousso (Institut Pasteur, Paris, France)
Cellular orchestration of T cell priming in vivo.

October

Jorge Carneiro (IGC)
Repertoire selection and dynamics immunology's dirty little secret.

Florence Janody (IGC)
Translating tissue patterning into organ morphogenesis through remodeling of the actin cytoskeleton.

Cornelis Weijer (Wellcome Trust Biocentre, Univ. of Dundee, UK)
Chemotactic cell movement during multicellular development.

Peter Hepler (Morrill Science Center III, Univ. of Massachusetts, USA)
Oscillatory pollen tube growth: imaging underlying structures and processes.

Anthony De Tomaso (Departments of Biology and Pathology, Stanford University, USA)
Histocompatibility in the primitive chordate, *Botryllus schlosseri*.

Leonor Parreira (IMM, Lisbon, Portugal/IGC)
Making blood from embryonic stem cells. Views from Notch.

Keith Roberts (John Innes Centre, Norwich Research Park, Norfolk, UK)
On the size of plant cells.

Manuel Serrano (Spanish national Cancer Center (CNIO), Madrid, Spain)
Tumor suppressors in cancer, cellular senescence and aging.

António Duarte (FMV, Lisbon, Portugal/IGC)
The Notch ligand Delta-like 4 negatively regulates endothelial tip cell formation and vessel branching.

Ana Costa-Pereira (Imperial College London, Molecular Oncology/Lung Cancer Group, Hammersmith Hospital, London, UK)
Novel components of JAK/STAT signalling pathways identified using FACS-based siRNA screens.

Steve Russell (Cambridge Systems Biology Centre, UK)
Exploring in vivo chromatin organisation at a genome-wide scale.

Julian Lewis (Vertebrate Development Lab., London Research Inst., Cancer Research, UK)
Feedback loops in the Notch pathway: generating patterns in space and time.

José António Belo (IGC)
Constructing the vertebrate embryo: new insights on old views.

November

Michael Neuberger (MRC Laboratory, UK)
Programmed DNA deamination as a trigger for antibody diversification and in retroviral restriction.

Luís Graça (IGC)
Reprogramming the immune system towards tolerance.

João Pedro Magalhães (Harvard Medical School, Boston, USA)
Functional genomics and long-lived mice: new approaches to the old problem of aging.

Yves Beuzard (INSERM U733 Institut Universitaire d'Hematologie, Hopital Saint-Louis, France)
Gene therapy of hemoglobin disorders.

Carlo Brugnara (Harvard Medical School, Children's Hospital Boston, USA)
Erythroid Ca-activated K channel: from pathophysiology to therapy.

David Marshall Porterfield (Purdue University, USA)
Signaling in gravity dependent developmental polarity in *Ceratopteris richardii*.

Luísa Mota-Vieira (HDES, Azores, Portugal/IGC)
Genetics in Azores: The road from population structure to disease.

Julie Ribot (INSERM U563, University Paul Sabatier, Toulouse, France)
Thymic development of CD4⁺CD25⁺Foxp3⁺ regulatory T cells.

Pedro Mendes (Virginia Bioinformatics Institute, USA)
Top-down modeling of biochemical networks: a grand challenge.

Mark Shlomchik (Yale Univ. School of Medicine, USA)
Activation of autoreactive B cells: T cells, tolls, and tolerance.

Nico Stollenwerk (IGC)
Meningitis, pathogenicity near criticality: the theory of accidental pathogens, models and data.

Jason Swedlow (University of Dundee, UK)
Centromeres, kinetochores and spindles in cells and tissues.

Louis Du Pasquier (Zoologisches Institut der Universität Basel, Switzerland)
Germline and somatic diversification in the immune systems of Metazoa.

Louis Du Pasquier
Origin of the vertebrate immune system : I-lymphocytes and antigen specific receptors.
Zoologisches Institut der Universität Basel, Switzerland

Maria Mota (IMM, Lisbon, Portugal/IGC)
Malaria infection: approaching the host.

Louis Du Pasquier (Zoologisches Institut der Universität Basel, Switzerland)
Origin of the vertebrate immune system: II-MHC.

December

Helena Soares (IGC)
The game of microtubules in protozoan cells.

Henrique Teotónio (IGC)
The genetics of adaptation in *Drosophila melanogaster*.

Cristina Cardoso (Max Delbrück Center for Molecular Medicine, Berlin, Germany)
Dynamics and epigenetic control of chromatin replication.

Helga Nowotny (European Research Council, Brussels, Belgium)
The potential of the life sciences and its impact on society.

Walter Ghering (Biozentrum, University of Basel, Switzerland)
The journey of a Biologist.

Elaine Dzierzak (Erasmus MC, Rotterdam, The Netherlands)
The development of hematopoietic stem cells within the embryonic microenvironment.

Dies Meijer (Erasmus MC, Dept of Cell Biology, Rotterdam, The Netherlands)
Molecular dialogues in peripheral nerve development.

Walter Ghering (Biozentrum, University of Basel, Switzerland)
The development and evolution of eyes and photoreceptors.

Paul M. Brakefield (Institute of Biology Leiden, The Netherlands)
Exploring the evolvability of butterfly eyespot patterns.

Jose Faro (Univ. Vigo, Spain/IGC)
Overview of recent work and new projects: theory, experiments, (Nano)Technology.

Jörg Großhans (Zentrum für Molekulare Biologie, Heidelberg Univ., Germany)
Embryo cellularization: Localised Rho signalling and the position of the furrow canal.

TEACHING

POST-GRADUATE EDUCATION

Post-graduate education has always been a strong valence of the IGC. This tradition has been maintained through the establishment of the Gulbenkian Programme in Biology and Medicine, which ended in 1999 and was followed by the Gulbenkian Programme on Biomedicine that is still in operation but suspended admissions in 2005. In 2005, a new PhD Programme in Computational Biology was launched, in collaboration with the Fundação para a Ciência e a Tecnologia and Siemens Portugal. Over the last

PHD PROGRAMME IN COMPUTATIONAL BIOLOGY

The Fundação para a Ciência e a Tecnologia, the SIEMENS SA Portugal, and the Fundação Calouste Gulbenkian decided to join efforts to promote a pilot PhD Programme in Computational Biology.

The PhD Program in Computational Biology aims to ensure the training of a limited number of PhDs in this area at an internationally competitive level. This program is organized by the Instituto Gulbenkian de Ciência in cooperation with several national and international institutions, and runs in close interplay with a Collaboratorium in Computational Biology.

Direction

Marie-France Sagot , *INRIA, France (Program Director)*
Jorge Carneiro, *IGC, Oeiras (Program Deputy-Director)*
Luis Rocha, *Indiana University, USA (Collaboratorium Director)*

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Eduardo Rocha, *Pasteur Institut, France*
Claúdio Soares, *ITQB, Oeiras*
Raquel Tavares, *University of Lyon, France*

Students of the PhD Programme in Computational Biology 2006

Ana Paula Santos Botelho Oliveira Leite
Bruno Emanuel Ferreira de Sousa Correia
Guilhermina Isabel dos Santos Duarte
Liliana da Conceição Monteiro Salvador
Luís Filipe Domingos Pereira de Figueiredo
Jacinto José Fonseca Pereira
Márcio Duarte Albasini Mourão
Nuno Miguel Dias Mendes
Pedro Tiago Gonçalves Monteiro
Ramiro Emanuel Magno Morgado
Rogério Paulo Pelaio Candeias
Sara Vieira da Silva

PhD Programme in Computational Biology for 2006

January 2nd - January 6th
Review Week - Marie-France Sagot

January 9th - January 20th
RNA Structure
Eric Westhof
Introduction to Bayesian inference and statistics
Antonia Turkman, Carlos Daniel Paulino
Gene Finding
Alain Viari

January 23rd January 27th

Motifs and genome organization

Sophie Schbath, Casey Bergman

Bayesian Decision Theory

João Gama

January 30th February 3rd

Genome Evolution and Genome Dynamics

Mário Figueiredo, Yves van de Peer

February 6th February 17th

Genome Rearrangements

Arlindo Oliveira, Anne Bergeron, Luis Borges de Almeida, Mário Silva, Francisco Couto, Ana Fred

February 20th February 24th

Genomes: Order and Disorder

Eduardo Rocha, Sofia Pinto

February 27th March 3rd

Function classification

Sarah Teichmann

March 6th March 31st

Transcriptomics and proteomics

Microarray analysis

Stephane Robin

Dynamic systems for non-physicists

Jorge Carneiro

Introduction to Dynamic Systems

João Miranda Lemos, Jorge Carneiro

Generic aspects of networks

José Fernando Mendes

April 3rd April 7th

Protein Interaction Networks

Luis Rocha, José Pereira-Leal, Santiago Schnell

May 2nd May 19th

Metabolic networks

Jean-Pierre Mazat, David Fell, Rui Alves, Armindo Salvador

Introduction to applied bifurcation theory

Frank M. Hilker

May 22nd - June 2nd

Python Programming

Leonor Palmeira

Gene regulatory networks

Hidde de Jong

Computational models for cellular rhythms

Albert Goldbeter

Functional and Comparative Genomics

Ricardo Azevedo

June 12th- June 16th

Systems of populations

Gabriela Gomes, Jorge Carneiro, Isabel Gordo

Machine Learning Methods for Computational Proteomics and Beyond

Pierre Baldi

June 19th - June 20th

Siemens Workshop on Medical Applications

David Brett, Sven Meyburg, Jorg Becker, Pierre Baldi, Christoph Lenz, Maria Mota

June 21th -June 24th

Theoretical aspects of pattern formation and development

Hans Meinhardt

June 26th-June 30th

Cytoskeleton and cell morphogenesis, motion and chemotaxis modelling

Alex Mogilner, Buzz Baum, Mark Miodownik

July 10th-July 14th

Whole Organism Modeling: Evolution and Development

Evo-Devo

Claudio Alonso, Miodrag Grbic, Élio Sucena

Basics on modelling spatially distributed systems: PDE's, CA's

Stan Maree

Modelling Drosophila segmentation

Denis Thieffry

Hormonal regulation of morphogenesis: the Arabidopsis root

Veronica Grieneisen

PhD Programme in Computational Biology for 2006/2007

October 2nd - October 28th

Introductory Module

Basics on the Theory of Evolution

Isabel Gordo, Élio Sucena, Rui Martinho, Henrique Teotónio, Francisco Dionísio

Statistics and logic

Dinis Pestana, Susana Vinga, Nuno Sepúlveda, Pedro Matos

Algorithms

Ana Teresa Freitas, Ana Cristina Paulo

Biology for non biologists

Jorge Carneiro, Greg King, Constantin Fesel, Jocelyne Demengeot, Moises Mallo, Miguel Godinho Ferreira, Mónica Bettencourt, Ana Costa Pereira, Álvaro tavares, Sérgio Dias, Vasso Kostourou, Florence Janody, Miguel Martins

Introduction to Python

Nuno Mendes

October 30th - November 24th

Molecular Sequences and Structures 1

Biology. Cell Interactions

António Coutinho, Salvatore Valitutti, Rosalina Fonseca, Leonor Saúde

Population genetics and evolution

Brian Charlesworth

Network topology. Neuronal Networks. Immune Networks. Network Epidemiology. Networks in Evolution and Development

Jose Fernando Mendes, Marta Moita, Jorge Carneiro, Isabel Gordo, Ricardo Azevedo

Algorithms

Arlindo Oliveira

Sequence alignment, from pairwise to multiple, from genes to genomes

Lior Patcher

Molecular phylogeny

Katharina Huber

Comparative genomics

Roderic Guigo

November 27th - December 8th

Evolutionary and Functional Genomics I:

Genome Structure Nuclear organization and epigenomics

Ana Pombo, Vincent Daubin, Gabriel Marais, Benjamin Audit, Enrique Blanco

Evolutionary and Functional Genomics II:

Genome evolution and genome dynamics

December 11th - December 22nd 2006

Eduardo Rocha, Itsik Pe'er

PhD PROGRAMME of the INSTITUTO GULBENKIAN DE CIÊNCIA (PDIGC)

Directors

Henrique Teotónio
Sérgio Gulbenkian

The aim of the Doctoral Programme of the Instituto Gulbenkian de Ciência (PDIGC) is to provide a research environment at the IGC so that PhD students can develop the skills and knowledge in order to contribute to research as professionals. The Programme encourages creativity, critical reflection, conceptual development and professional competence, judgement and confidence. Students of the PDIGC, who are listed above, are selected by personal interview, either after proposals from the respective PI/Supervisor, or among applicants to an open call. Once accepted, PDIGC students obtain the institutional compromise of support to completion of their thesis, must follow a number of graduate courses organized at the Institute, and have a Thesis Committee appointed to accompany the development of their work. They are free to register at any University, in agreement with the respective Supervisor. All PDIGC students presented their works at the First Annual Meeting of Gulbenkian Students which took place at the Institute from 15 to 19 December 2006.

PhD Programme for 2006

Techniques I (recombinant DNA, Protein, microscopy) organized by Sukalyan Chatterjee
16-20 January

Techniques II (statistics, inference and expt design) organized by Jorge Carneiro
13-17 February

Evolution (population and quantitative genetics, game theory, evodevo) organized by Henrique Teotónio
13-17 March

Genetics (model systems, physical mapping) organized by Elio Sucena
17-21 April

Cell-cell interactions (synapses, cytokines, specificity) organized by Jocelyne Demengeot
12-16 June

Networks (immunology, neuro circuits, behaviour, endocrine system, ecology/evolution) organized by Marta Moita
10-14 July

PhD Programme for 2006/2007

Empirical Techniques, organized by Sukalyan Chatterjee

25-29 September

Module Statistics and Experimental Design organized by Jorge Carneiro

2-6 October

Genetics, organized by Élio Sucena

9-13 October

Evolutionary Biology, organized by Henrique Teotónio

16 -20 October

Within-cell Biology, organized by Miguel Godinho

23 -27 October

Cell-cell interactions, organized by Jocelyne Demengeot

30 October 3 November

Networks, organized by Marta Moita/ Isabel Gordo

6-10 November

THE GULBENKIAN TRAINING PROGRAMME IN BIOINFORMATICS (GTPB)

The Gulbenkian Training Programme in Bioinformatics provides hands-on education in Bioinformatics, either to service-oriented personnel, or to scientists and students, particularly from the IGC, with specific interests on a given topic. In 2006, the Programme followed its activity plan that was previously prepared, aiming at providing a set of four thematic courses, in addition to the two introductory level courses.

Course attendance: a total of 75 attendees, 31 which from the IGC, 32 from other Portuguese institutes and 7 from foreign countries (Italy, Spain, Switzerland).

May 29th - June 2nd

Introduction to Bioinformatics IB06

(5 days)

Faculty: David P Judge, Department of Genetics, U. Cambridge, Cambridge, UK

External attendees: 7

IGC attendees: 6

June 28th - June 30th

Practical Microarray Data Analysis PMDA06

(3 days)

Faculty: Joaquin Dopazo, Centro de Investigaciones Principe Felipe, Valencia, ES

David Montaner, Centro de Investigaciones Principe Felipe, Valencia, ES

External attendees: 1

IGC attendees: 5

July 24th - July 28th

A Primer on Molecular Evolution, Phylogenetics & Phylogenomics PMEPP06

(5days)

Faculty: Hernan Dopazo, Centro de Investigaciones Principe Felipe, Valencia, ES

Toni Gabaldon, Centro de Investigaciones Principe Felipe, Valencia, ES

External attendees: 13

IGC attendees: 4

Nov. 6th - Nov. 9th

Ageing Research with Bioinformatics Methods ARBM06

(4 days)

Faculty: JP Magalhães, Harvard Medical School, Department of Genetics, Lipper Center for Computational Genetics, Boston, USA

Luciano Milanese, ITB, CNR, Milano, IT

External attendees: 7

IGC attendees: 1

Dec. 11th - Dec. 15th

Sequence Analysis using High Performance Computation SAHPC06

(5 days)

Faculty: David P Judge, Department of Genetics, U. Cambridge, Cambridge, UK

Pedro Fernandes, Bioinformatics Unit, Instituto Gulbenkian de Ciência, Oeiras, PT

External attendees: 3

IGC attendees: 6

Dec. 18th - Dec. 20th

Bioinformatics Approaches in Immunology Research BAIR06 (3 days)

Faculty: Pedro A Reche, Dana-Farber Cancer Institute, Boston USA,

Universidad Complutense de Madrid, Madrid ES

Jan Andersson, University of Basel, Basel, CH, ALFAMA, Lisboa/Oeiras PT

External attendees: 4

IGC attendees: 9

SCIENCE AND SOCIETY

Over the last few years, the IGC implemented a Science Communication Program to promote public engagement in science through direct, bilateral communication, e.g., a dialogue between scientists and the public. Some of the activities are already a tradition at the IGC, like the Open Day, lectures for science teachers and school visits. In 2006, the collaboration with the Oeiras City Hall (Câmara Municipal de Oeiras, CMO), was maintained with the project “Oeiras Vive a Ciência”. In the scope of this project, organized together with the institutes that form the Associated Laboratory IGC/ITQB/IBET, a number of activities were developed for different target audiences. These aimed at showing the public the research developed in these institutions, whilst allowing direct interaction between researchers and the public. On the other hand, an important collaboration was initiated this year with an association of reporters on science and environmental, ARCA (Associação de Repórteres de Ciência e Ambiente) that aims at organizing regular discussion sessions between journalists and invited/IGC scientists in a particular field of expertise that is of current concern in the public eye, chosen by the participant journalists.

In detail, in 2006, the following activities were organized by the Science Communication Office of the IGC:

Media

Press Office

Press office duties include preparing and sending out press releases, organizing press conferences and a permanent dialogue and support of the science journalists' work.

IGC activities were covered in several national daily and weekly important newspapers (Público, Diário de Notícias, Jornal de Notícias, Expresso, 24horas, Sol, Semanário, Semanário Económico, Correio da Manhã), magazines (Visão, Sábado, Notícias Magazine, Homem Magazine, Eles&Elas, Máxima), specialized publications for medical professionals (Mundo Médico, Tempo Medicina, Médico de Família), local press, online press (RTP Online, SIC Online, Público Online, Portugal Diário, Ciência Hoje, NetFarma, Saúde na Internet), television stations (SIC, TVI, SIC Mulher, RTP1, RTP2, RTPN) and radio stations (TSF, Rádio Renascença, Antena 3).

Coordinator: Sofia Cordeiro

Stem Cells: Discussion Session for Journalists

Date and Place: 28th September, IGC

Description: Discussion session lasting one afternoon, organized at the IGC and directed at science journalist, joint organization with an association of reporters on science and environmental, ARCA (Associação de Repórteres de Ciência e Ambiente)

Organization: Sofia Cordeiro (IGC)

Speakers: José António Belo (Universidade do Algarve, IGC), Rosália Sá (Instituto de Ciências Biomédicas Abel Salazar), Austin Smith (Institute for Stem Cell Biology, Universidade de Cambridge)

Participants: 13 portuguese science journalists were present (ARCA associates).

Science Teachers

Brain@IGC, Biology in Modern Times

Date e Place: 15th March, IGC

Description: An afternoon of lectures and experimental activities as examples to repeat in class on the activity of the research groups working in neurosciences at the IGC. This activity was a part of Brain Awareness Week, promoted by the Federation of European Neuroscience Societies with the support of Dana Foundation

Organization: Sofia Cordeiro (IGC)

Speakers: Rosalina Fonseca (IGC), Madalena Martins (IGC), Sofia Oliveira (IGC)

Participants: 22 teachers, from primary education to university, and from different academic backgrounds.

Evaluation: The event was globally evaluated with 4.4 out of 5 in terms of importance and interest. Participants unanimously stated that they would recommend these activities to their colleagues.

Students

School Visits to the IGC

A total of 708 students visited the IGC in 2006, distributed in 27 visits of 20 schools, from pre-schoolers to university students, coming from Lisboa, Santarém, Setúbal, Faro, Leiria, Castelo Branco and Viseu and several local schools Oeiras, Carcavelos and Parede. 62 IGC scientists were involved in these visits.

Organization: Sofia Cordeiro (IGC); Carla Fernandes (IGC), Ana Rita Marques (IGC), Sofia Simões (IGC)

Science in Debate

Date and Place: Science and Technology Week, 20th-24th November, IGC and ITQB in turns

Description: In the scope of the project Oeiras Vive a Ciência and the activities of the Science and Technology Week, 5 debates were organized between researchers of the Associate Laboratory IGC/ITQB/IBET and students from basic and secondary education levels.

Topics and Speakers:

“Stem cells: where did we come from and where are we going?”, Domingos Henrique (IMM, IGC), Pedro Cruz (ECBio, IBET)

“New World Diseases: can we have a new world?”, Ricardo Pimenta-Araújo (IGC)

“Genetics of complex diseases: what are scientists doing?”, Madalena Martins (IGC)

“Chemistry: myths and facts of a neglected science”, Carlos Romão (ITQB)

“Transgenic plants: problem or solution?”, Margarida Oliveira (FCUL, IBET), Teresa Crespo (IBET)

Organization: Sofia Cordeiro (IGC), Ana Sanchez (ITQB)

General Public

Destination: Science!, IGC Open Day

Date and Place: 13th May, IGC

Description: During a day, scientist at the IGC welcomed visitors in, showing them activities of their everyday in the labs and informally chatting about the hows and whys of basic research. The available activities included informal lectures, an interactive bioinformatics exercise, screening of documentaries on research at the IGC and research images and movies made by IGC scientists, visits to labs, a show case of the biological models most used in biomedical research and interactive activities organized by all the labs of the IGC, with demos and simple experiments. The Open Day was partially supported by CMO and Pfizer and had contributions from several IGC suppliers (Emílio Azevedo Campos, Alfagene, Arsplus, Futurlab, Vaz Pereira, VWR). The IGC Open Day is an activity integrated in the Project Oeiras Vive a Ciência.

Organization: Sérgio Gulbenkian (Supervision), Sofia Cordeiro, Greta Martins, Sheila Vidal, Manuel Rebelo, Isabel Marques, Ana Lúcia Mena, Carla Fernandes

Participating scientists: 125 scientists volunteered to participate in the Open Day activities, from undergrad students to group leaders.

Visitantes: Circa 1300

Avaliação: 313 visitantes responderam a um questionário e classificaram o evento com 4,5 pontos numa escala de 5.

Science in the Garden

Date e Place: Local holidays, June 7th (Oeiras public holiday) and June 10th (Lisbon public holiday), Yearly festivities of Oeiras, Oeiras Municipal Garden

Description: In the scope of Oeiras Vive a Ciência project, we conducted a science fair for 2 days in the local festivities of Oeiras, with activities similar to the ones tested in the Open Days. Science in the Garden targets an audience usually unaware/uninterested in scientific issues that attends these festivities and aims to show how science is present in everyday life our kitchens, streets, etc. and stimulate scientific curiosity in visitors of all ages.

Organization: Sofia Cordeiro (IGC), Ana Sanchez (ITQB)

Science writing

Newsletter of the Fundação Calouste Gulbenkian

“Dia Aberto no Instituto Gulbenkian de Ciência: olhos deslumbrados e cientistas de palmo e meio”, Newsletter Fundação Calouste Gulbenkian, NÚMero 74, Junho 2006,

Fundação Calouste Gulbenkian, Lisboa

Promoção da actividade do IGC

“Oeiras Vive a Ciência Project, Motivating for discoverie”

“Projecto Oeiras Vive a Ciência, Motivar para a Descoberta”, Communication at the National Debate on Education, October 2006

“Scientists and Science Communication A Role for Institutions”

“Cientistas e Comunicação de Ciência O Papel das Instituições”, Communication at a Workshop and Forum on Science Communication, 1st National Meeting of Post-Graduates in Biological Sciences, May 2006.

SYMPOSIA, CONFERENCES AND MEETINGS ORGANISED BY THE IGC

**Advanced Course on "Epidemiology of Infectious Diseases
Instituto Gulbenkian de Ciência
10-14 April 2006**

Organisers: Gabriela Gomes, Cristina Paulo, Lisa White (IGC, Oeiras, Portugal), Eduardo Massad (Universidade de São Paulo, Brazil) Cláudio Struchiner (Fundação Oswaldo Cruz, Brazil).

This course combined a series of introductory lectures in epidemiology - from classical methods to modern techniques - with a number of outstanding infectious diseases selected to highlight the requirement for interdisciplinary approaches. The engagement of mathematics, genetics and evolution in epidemiology has increased immensely over the last decades, leading to exciting developments and opening avenues to the new generations of scientists and health professionals. Many branches of basic sciences might become more engaged in epidemiology, and epidemiology might present new problems to the basic sciences. But this requires overlap in training and experiences.

**1st Meeting of the ENFIN Network and
Workshop on Discrete Function Prediction
Instituto Gulbenkian de Ciência
15-16 May 2006**

Organiser: Pedro Fernandes (IGC, Oeiras, Portugal)

The EU funded ENFIN Network of Excellence "Enabling Systems Biology" met at the IGC. The meeting was a mixture of closed and open sessions, the latter being part of the 4th European School of Bioinformatics.

**4th European School of Bioinformatics BioSapiens
Instituto Gulbenkian de Ciência
15-19 May 2006**

Organiser: Pedro Fernandes (IGC, Oeiras, Portugal)

Following an invitation from the Chair of the Training Committee of BioSapiens (EC, FP6 LSHG-CT-2003-503265), we have organized the 4th European School in Bioinformatics at the IGC. BioSapiens is a Network of Excellence, funded by the European Union's 6th Framework Programme, and made up of Bioinformatics researchers from 25 institutions based in 14

countries throughout Europe. One of their activities is exactly to train Bioinformaticians and to encourage best practice in the exploitation of genome annotation data for Biologists. By running the School twice a year in different locations BioSapiens hopes to motivate young talented people to step into the field. The 4th European School in Bioinformatics has attracted 49 attendees, 4 of which were Portuguese, was taught by 5 lecturers and included 4 seminars. The school consisted of a total of more than 44 hours of tuition, including of lectures, practices and seminars. Vitor Sousa, and Luiz Goulart helped in the organization of the event.

AWRN The Advanced Workshop on Regulatory Networks
Instituto Gulbenkian de Ciência
22-24 May 2006

Organiser: Pedro Fernandes (IGC, Oeiras, Portugal)

AWRN The Advanced Workshop on Regulatory Networks was organized at the IGC as a closed, brainstorming event for a limited number of invited participants. The group presented several views on the interpretation of regulation phenomena in the context of Biological Networks and their properties. The discussions were centred in the comparison of various Systems Biology approaches, their successes and failures, and the prospects of alternative methodologies mainly the use of statistical techniques adapted to high throughput data in Genomics and Proteomics.

EMBO Workshop on the Evolutionary Biology of *Caenorhabditis elegans* and closely related species
Instituto Gulbenkian de Ciência
23-27t May 2006

Organisers: Henrique Teotónio (IGC, Oeiras, Portugal), Marie-Anne Félix (Institut Jacques Monod, Paris France), Patrick C. Phillips (University of Oregon, Eugene, USA) and Ricardo Azevedo (University of Houston, USA).

The workshop was centered on the following three major themes: 1. Evolution of breeding systems and its population genetic consequences. Topics such as the evolution of mutation rates, interaction between population structure and natural selection, experimental adaptation to laboratory conditions, experimental evolution of androdioecy, as well as patterns of molecular gene diversity in natural populations, were discussed; 2. Evolution of developmental pathways and gene networks. Topics such as the importance of cis-regulatory and protein evolution, the evolution of cross-talk among pathways, and the evolution of developmental plasticity were addressed. 3. Genomics and quantitative genetics of *Caenorhabditis* species. Topics like genome evolution and the mapping of complex traits such as behavior and host-parasite interactions were discussed.

The workshop took place during three full days where sessions were thematically organized while allowing for overlapping discussions. In each session an introductory and integrative 15 minute presentation by a senior speaker was done, followed by two 45 min contributed talks (with 15 min discussion). Two afternoons were devoted for poster presentation and informal discussions.

Overall, more than 50 researchers working with *Caenorhabditis* species, coming mostly from Europe and the USA, but also from Canada and China, participated in the workshop. A publication resulted from the workshop: Sara Carvalho, Antoine Barrière and André Pires-da-Silva. 2006. The world of a worm: a framework for *Caenorhabditis* evolution. *EMBO Reports* 10: 981984

**Comunicar Ciência em Portugal
Instituto Gulbenkian de Ciência
3 June 2006**

Organisers: Monica Bettencourt-Dias (IGC, Oeiras, Portugal), Sofia Jorge Araújo (Barcelona University, Barcelona, Spain) and Ana Godinho Coutinho (Stem Cell Institute, Edinburgh, UK).

A meeting where people interested in science communication in Portugal (researchers, journalists and science communicators) presented and discussed their activities in this field. International experts in science communication, such as Anna Lacey (“The Naked Scientists”) and Ben Johnson (“Meet the Scientist”) attended the meeting.

**Workshop on Coalescent Theory and its perspectives in human genetics and complex trait mapping.
Instituto Gulbenkian de Ciência
21-24 June 2006**

Organiser: Constantin Fesel (IGC, Oeiras, Portugal)

Coalescent theory, an approach to reconstruct genealogical relationships of a population sample with given information on extant gene diversity, was originally developed in the context of evolutionary genetics, where patterns of past demography, selection and genetic drift have been inferred. Recently, it is becoming a possible tool in human genetics, comprising the estimation of distributions of recombination rates and particularly population-based mapping of genotypes underlying complex traits. The workshop was addressed to all researchers, postdocs and students working on or interested in the subject, and particularly to human geneticists. Two days of lectures and discussion, followed by practical exercises with available software for coalescent modelling.

The Fifth International Conferences on Artificial Immune Systems ICARIS2006

Instituto Gulbenkian de Ciência, Oeiras

4-6 September 2006

Organisers: Hugues Bersini (ULB, Belgium) and Jorge Carneiro (IGC, Oeiras, Portugal).

The field of Artificial Immune Systems (AIS) is one of the more recent biologically inspired approaches to emerge from computer science. The natural immune system is an adaptive learning system that employs many parallel and complementary mechanisms for defense against foreign pathogens and self-regulatory processes. It is a distributed system, capable of constructing and maintaining a dynamical and structural identity, capable of learning to identify previously unseen invaders and remembering what it has learnt. Numerous immune algorithms now exist, based on processes identified within human immune systems. These computational techniques have many potential applications, such as in distributed and adaptive control, machine learning, pattern recognition, fault detection, computer security, optimization, and distributed system design.

The aims of the conference are to strengthen AIS research by exploring different immunological mechanisms, and their relation to information processing and problem solving. The main themes of the conference include: Self-nonsel models, self-assertional models; Network models (e.g., of B-cells); Clonal selection and hypermutation; Danger theory models; Abstractions of other immunological processes; Comparisons between AIS and other naturally-inspired paradigms; Applications of AIS; and Theory of AIS. The conference provides the leading forum for presenting and disseminating the latest work in the field of Artificial Immune Systems, and is the only conference dedicated entirely to the field of AIS.

II Summer School on Mathematics in Biology and Medicine

Instituto Gulbenkian de Ciência

11 - 15 September 2006

Organisers: Isabel Gordo, Gabriela Gomes, Francisco Dionisio and Jorge Carneiro (IGC, Oeiras, Portugal).

A summer school opened to PhD students, post-docs and researchers from all areas of mathematical biology, with several lectures, oral and poster presentations with the aim of generating novel frameworks and new perspectives in biomedical sciences.

1st Mediterranean Workshop on Clinical Immunology

Évora

26-29 October 2006

Organisers: Maria Margarida Souto Carneiro (IGC, Oeiras, Portugal); Moncef Zouali (INSERM, Paris, France); Ricardo Pimenta Araújo (IGC, Oeiras, Portugal, Portugal)

/Hospital Santa Maria, Lisbon, Portugal); João Eurico da Fonseca (Instituto de Medicina Molecular, Lisbon, Portugal); Maria Francisca Morais Fontes (IGC, Oeiras, Portugal).

The Portuguese Society for Immunology; the Portuguese Society for Rheumatology; the Autoimmunity Study Group of the Portuguese Society for Internal Medicine and the Committee for Clinical of Immunology from the International Union of Immunological Societies organized the 1st Mediterranean Workshop on Clinical Immunology. The aim of this workshop was to bring the latest scientific advances in clinical immunology, particularly, to the Mediterranean and Middle East physicians and scientists working in the various fields of immunology.

The world renowned panel of speakers and the restricted number of participants (120) fostered fruitful scientific discussions and new research and clinical collaborations among all the participants. Additionally the Clinical Round Tables allowed the participants to discuss therapeutic strategies for autoimmune and infectious diseases. The main areas of discussion stressed pathologies afflicting particularly the south European, Mediterranean and Middle Eastern countries.

**1st Meeting of the Portuguese Society for Developmental Biology
Instituto Gulbenkian de Ciência, Oeiras
27-28 October 2006**

Organisers: Leonor Saúde, Élio Sucena (IGC, Oeiras, Portugal), Raquel Andrade, Isabel Palmeirim (Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Ciências da Saúde, Universidade do Minho, Braga, Portugal).

A two-day meeting that provided the conditions for Portuguese Developmental Biology researchers to know what is being done in Portugal, receive feedback on their work and establish national collaborations. The meeting had the attendance of 77 people representing 18 research groups. The Meeting's opening lecture entitled "Feedback loops in the Notch pathway: generating patterns in space and time" was given by Julian Lewis (Cancer Research UK) and the Meeting's closing lecture entitled "Making a brain: a molecular dissection of neural induction" was given by Claudio Stern (University College London).

**Mineralised tissue formation, regeneration and repair
Instituto Gulbenkian de Ciência
16th and 17th November 2006**

Organisers: Nuno Afonso, Manuel Rebelo, Rui Gardner, Carla Afonso, Ricardo Pimenta-Araujo (IGC, Oeiras, Portugal).

The aim of this workshop has been to gather both the Portuguese and foreign scientific community to discuss the most recent and relevant data in the field of Mineralised tissue

formation, regeneration, and repair, and to establish a bridge with the potential clinical applications of these findings. This Workshop was integrated in a workshop series organized by the post-doctoral fellows of the Instituto Gulbenkian de Ciência (IGC). Throughout the years, the IGC has established as a major priority the promotion of the highest educational level in biological and biomedical sciences. With the aim of reinforcing their contribution to the scientific events held at the Institute, the post-doctoral fellows of the IGC have joined to organize a series of workshops in different fields of excellence.

Angiogenesis: from the Lab to the clinic (Current Opinion Meeting)
Instituto Gulbenkian de Ciência, Oeiras
25th November 2006

Organisers: Sergio Dias (Instituto Português de Oncologia, Lisbon, Portugal and IGC, Oeiras, Portugal).

The aim of the Meeting was to group Portuguese and Foreign researchers in Basic and Clinical Tumor Angiogenesis, to define the most significant advances in the Field, and to identify the major flaws and/or disappointments.

1st Annual Meeting of Gulbenkian Students
Instituto Gulbenkian de Ciência
15-19 December 2006

Organisers: (PDIGC) Ana Rita Fragoso, Catarina Figueiredo, Paula Rodrigues, Ricardo Águas, Rita Neres, sander Van Noort and Tiago Paixão; (PDBC) Bruno Correia; (PGDB) Cristina Pina Frederico Regateiro, Joana Enes, José Antão, Manuel Batista, Pedro Jorge Batista and Rita Silva.

For the last 12 years, the IGC has organized PhD students meetings: we have had the Annual Meeting of the PGDBM and then of the PGDB in Curia; then, we had a couple of PGDB meetings with the PhD Programmes of Porto and Coimbra; for several years we had the in-house meetings of the PDIGC. In all cases, these were very special occasions for all students and teachers, and for all those who care about the programs. In 2006, thanks to the understanding and generosity of all parties involved, we had the chance to meet all together: PGDB, PDIGC and PDBC.

The first Annual Meeting of Gulbenkian Students took place at the IGC from 15th to 19th December 2006. The scientific sessions included presentations from 59 students and plenary lectures given by Helga Nowotny (Vice-President, European Science Council - Scientific Council) who talked about “The potential of the life sciences and its impact on society”, Walter Gehring (Biozentrum, University of Basel, Switzerland) who talked about “The development and

evolution of eyes and photoreceptors”, Elaine Dzierzak (Department of Cell Biology and Genetics, Erasmus University, Netherlands) who talker about “ The development of hematopoietic stem cells within the embryonic microenvironment”, Dies Meijer (Department of Genetics, Erasmus MC, Netherlands) who talked about “Molecular dialogues in peripheral nerve development” and Paul Brakefield (Institute of Biology Leiden, Netherlands) who talked about “ Exploring the evolvability of butterfly eyespots patterns.

**Portuguese Fly Meeting (Annual Portuguese Meeting of Drosophila Research).
Instituto Gulbenkian de Ciência
22 December 2006**

Organisers: Monica Bettencourt-Dias (IGC, Oeiras, Portugal), Rui Martinho (IGC, Oeiras, Portugal) and Rita Sousa-Nunes (National University of Singapore, Singapore).

The Portuguese Drosophila Meeting is an annual encounter of scientists working with *Drosophila melanogaster*. This meeting is open to all scientists (Portuguese and non-Portuguese) working in this research field. The goal of this meeting is 1) to strengthen the research community working in Portugal with *Drosophila melanogaster* as a research model, 2) to foster collaborations between scientists working in Portugal and Portuguese scientists that work abroad. The location of this annual meeting alternates between Lisbon and Porto.

**II Gulbenkian Alumni Meetings (GAMeets 2006)
Instituto Gulbenkian de Ciência
27 December 2006**

Organisers: Paula Duque, Sofia Cordeiro (IGC, Oeiras, Portugal) Margarida Trindade, André Valente (Associação Viver a Ciência, Lisbon, Portugal).

This is the second annual Gulbenkian Alumni Meeting. Five scientific seminars, delivered by Gulbenkian Alumni at different stages of their career, will be followed by a Christmas lunch and a panel discussion on the topic of Inbreeding in Portuguese Univesrities during the afternoon. The moderator of the debate will be Prof. Nuno Crato, and invited participipants will include Prof. Marçal Grilo (FCG), Prof. Irene Fonseca (Carnegie Mellon, USA), Prof. Teresa Lemos (OCES) and Prof. Arcadi Navarro (UPF, Barcelona).

THESES

The students listed below have prepared, at the IGC, in total or in part, the Theses they have presented and defended, with success, in 2006.

PhD Theses

Cristina Afonso “Cell polarity in the embryonic chick neuroepithelium: role of the PAR polarity complex”, Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, 2006.

Paulo Jorge Silva Alves "Isolamento e caracterização das cinases mitóticas dMps1 e dPlkk1 em *Drosophila melanogaster*", Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, April 2006.

Fernanda Bajanca “Integrin-extracellular matrix interactions in early skeletal muscle development in the mouse (*Mus musculus*) embryo”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, February 2006.

Dinis Calado “Stochastic Monoallelic Expression of IL-10”, Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, November 2006.

Ana Margarida Coutinho “Behavior genetics: identification and characterization of genetic susceptibility factors for Autism Spectrum Disorders”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, October 2006.

Célia Domingues “Caracterização das proteínas tipo Mob1 em *Drosophila*”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, April 2006.

Mariana Pina Lince de Faria, "Caracterização de mutantes mitóticos em *Drosophila melanogaster*", Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, May 2006.

Susana Isabel Alves Godinho, "Cell division in *Drosophila melanogaster*: studying the role of polo kinase", Instituto Superior Técnico, Universidade Técnica de Lisboa, Lisbon, Portugal, January 2006.

Vincent Guiyedi “Etude des anticorps Auto-reactifs produits au cours de l'infection par *Plasmodium Falciparum*: implication dans la protection ou la pathogenese du Neuropaludisme”, Université Paris VI Pierre et Marie Curie, Paris, France, December 2006.

Cristina João “B cell dependent T cell development and function”, Mayo Clinic College of Medicine, Rochester, Minnesota, USA, April 2006.

Sofia Bizarro Nolasco da Silva Narciso “Estudo da Função e da Regulação do Cofactor A da Tubulina em Células de Mamífero”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, January 2006.

Hélia Oliveira Neves “Efeito dos ligandos Notch Delta1 e Jagged1 na hematopoiese humana”, Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, January, 2006.

Elisabete Pires “Phylogeny, population structure and genetic diversity of dog breeds in the Iberian Peninsula and North Africa”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, November 2006.

Ana Margarida Mourão Prado “Definição do papel do NO (óxido nítrico) como molécula de sinalização na reprodução sexuada de plantas”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, September 2006.

Ana Sofia Quina “Contribuição para o conhecimento da organização especial e funcional do núcleo eucariota: Localização subnuclear de genes em células hematopoiéticas humanas”, Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, January, 2006.

Sofia Rodrigues, “Spatial temporal control of somitogenesis at the early stages of the chick embryo”, Escola de Ciências da Saúde, Universidade do Minho, Braga, Portugal, July 2006.

Mark Turan Jan Pena Seldon “Molecular Mechanisms underlying the protective effects of heme oxygenase-1: Interaction with the NF- κ B signal transduction pathway in endothelial cells”. Instituto de Ciencias Biomedicas Abel Salazar da Universidade do Porto, Porto, Portugal, December 2006.

Ana Maria Vieira “Estudo das bases moleculares do controlo da entrada de água em células vegetais desidratadas: hidratação do grão de pólen”, Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal, November 2006.

MSc Theses

Paulo Bettencourt “Analysis of transgenic mice expressing the recombination activating genes 1 and 2” University of Manchester, Manchester, UK, November 2006.

Ana Sofia Cabrita Figueiredo “Integration of Open Source Software tools for the in silico Study of Metabolic Pathways using Flux Balance Analysis”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, March 2006.

Senthamaraiselvi Palaniappan “Genomic Evidences for the Redox Activity in Oral-Microbial Induced Corrosion”, Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal, September 2006.

Maria Helena Mendes Soares “The influence of social interactions on the evolution of bacteria”, Instituto Superior de Psicologia Aplicada/Universidade Nova de Lisboa, Lisbon, Portugal, October 2006.

BSc Theses

Isabel Belo “Estudo da influência das células T reguladoras CD4+CD25+ na formação de centro germinais”, Universidade de Évora, Évora, Portugal, September 2006.

Teresa Cruto “Estudo da função do cofactor A da tubulina em células de mamífero: possível papel na diferenciação celular”, Faculdade de Ciências da Universidade de Lisboa, Portugal, October 2006.

Célia Ferreira “Estudo da influência das hormonas gonadais numa resposta imune primária”, Universidade de Évora, Évora, Portugal, July 2006.

Maria João Lagareiro “Estudo da formação de centros germinais ectópicos e infiltrado inflamatório na artrite reumatóide”, Universidade de Évora, Évora, Portugal, September 2006.

Raquel Valente Mendes “Definir e comparar o padrão de migração das células localizadas no lado esquerdo e direito do nó de Hensen”, Universidade Lusófona de Humanidades e Tecnologias, Lisbon, Portugal, September 2006.

Maria de Fátima Cardoso Pereira “Estudo da proteína TCTP de *Drosophila melanogaster*”, Instituto Superior Técnico, Universidade Técnica de Lisboa, Lisbon, Portugal, September 2006.

Daniel Reis “Modeling codon volatility under different modes of selection”, Évora University, Évora, Portugal, June 2006.

Frederico Rodrigues “Role of the Repulsive Guidance Molecules in Vertebrate Limb Development”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, July 2006.

Pedro Sanches “Detection of magnetically tagged structures in *Tetrahymena* cilia by magnetic force microscopy.” Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, October 2006.

Margarida Santos “Characterization of the expression pattern of the *erg* gene and its function during vertebrate limb development”, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, July 2006.

Rui Tostões “De novo transcription activation and polarity establishment in early *Drosophila* development: a forward genetics and bioinformatics approach.”, Universidade Nova de Lisboa, Lisbon, Portugal, July 2006.

Sandra Trindade “Evolution of mutators under strong bottlenecks” Évora University, Évora, Portugal, September 2006.

Others

Teresa Bárrio “Estudo de factores genéticos implicados na susceptibilidade ao autismo e aos acidentes vasculares cerebrais” Post-graduation in Biology, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, September 2006.

PARTICIPATION IN ACADEMIC COMMITTEES

José António Belo

Member of the Jury of the Ph.D Thesis of Fernanda Bajanca, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, February 2006.

Member of the Jury of the Ph.D Thesis of Claudia Susana de Lima Vieira, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, July 2006.

Jorge Carneiro

Member of the Jury of the Ph.D Thesis of Dinis Calado, Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, November 2006.

Member of the Jury of the Ph.D Thesis of Zacarias Chilengue, Instituto Superior Técnico, Lisbon, Portugal, July 2006.

Member of the Jury of the Ph.D Thesis of Arnaud Meironeinc, Université de la Méditerranée, Marseille, France, June 2006.

Member of the Jury of the Ph.D Thesis of João Andre Carriço, Universidade Nova de Lisboa, Lisbon, Portugal, June 2006.

António Coutinho

Member of the Jury of the Ph.D Thesis of Hélia Neves, University of Lisbon, Lisbon, January 2006.

Sergio Dias

Member of the Jury of the Ph.D Thesis of Hélia Neves, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, January 2006.

Member of the Jury of the PhD Thesis of Maria José Costa, Faculdade de Medicina, Universidade do Porto, Porto, Portugal, January 2006.

Member of the Jury of the Ph.D Thesis of Maria de Fátima Duarte, Universidade de Braga, Braga, Portugal, May 2006.

Member of the Jury of the Ph.D Thesis of Mario Graos, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, June 2006.

Member of the Jury of the Ph.D Thesis of Maria Joao Tavares, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, July 2006.

Member of the Jury of the Ph.D Thesis of Joao Pedro Veiga, ICBAS, University of Porto, Porto, Portugal, September 2006.

Francisco Dionísio

Member of the Jury of the Ph.D Thesis of Sofia Cabral de Andrade Duarte, Instituto Superior Técnico, Universidade Técnica de Lisboa, Lisbon, Portugal, March 2006.

António Duarte

Member of the Jury of the PhD Thesis of Maria João de Bettencourt Silva Tavares, University of Lisbon, July 2006.

Pedro Fernandes

Appointed representative of the Faculdade de Medicina da Universidade de Lisboa for the shared co-ordination, with the Instituto Superior Técnico, of the Bioinformatics course integrated in LEB, the BSc course in Biomedical Engineering.

Member of the Jury of the MSc. Thesis of Ana Sofia Cabrita Figueiredo Figueiredo, Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal, March 2006.

Member of the Jury of the MSc. Thesis of Senthamaraiselvi Palaniappan, Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal, September 2006.

Chairman, Publications and Public Relations Committee of the EMBnet

Appointed member of the Working Group that is preparing the Portuguese Node of the Global Biodiversity Information Facility, supported by FCT, GRICES and the Ministério da Ciência e Ensino Superior.

Miguel Godinho-Ferreira

Member of the Jury of the Ph.D Thesis of Isabel Jaco, Faculdade de Medicina da Universidade de Lisboa, Lisbon, Portugal, October 2006.

Gabriela Gomes

Member of the Jury of the PhD Thesis of Eliana Pinho, Universidade do Porto, Porto, Portugal, May 2006.

Member of the Jury of the PhD Thesis of Maria Inês Crisóstomo Ramos, ITQB, Universidade Nova de Lisboa, Lisbon, Portugal, November 2006.

A European Network on Modelling: Control Strategies for Health Threats Meeting.
Organized by the European Commission DG SANCO and DG JRC
Luxemburg, 20-21 November 2006.

Luis Graça

Member of the Jury of the Ph.D Thesis of Joana Feijó Cunha, Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Porto, Portugal, May 2006.

Member of the Jury of the Ph.D Thesis of Dinis Calado, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, November 2006.

Member of the Jury of the Ph.D Thesis of Constança Figueiredo, Universidade de Coimbra, Coimbra, Portugal, December 2006.

Domingos Henrique

Member of the Jury of the Ph.D Thesis of Hélia Cristina de Oliveira Neves, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, January 2006.

Member of the Jury of the Ph.D Thesis of Cláudia Lobato, Instituto Superior Técnico, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Elsa Abranches, Instituto Superior Técnico, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Tiago Daniel Oliveira Carneiro, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Teresa Raquel Duarte Pacheco, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Joana Girbal Brandão, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Paulo Jorge da Silva Alves, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Cristina Afonso, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Maria João Tavares, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, 2006.

Member of the Jury of the Ph.D Thesis of Lara Costa, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, 2006.

António Jacinto

Member of the Jury of the Ph.D Thesis of Crisitina Maria Paulino Proença Afonso, Universidade de Lisboa, Lisbon, Portugal, February 2006. Member of the Jury of the Ph.D Thesis, Paulo Jorge Silva Alves, Universidade de Lisboa, Lisbon, Portugal, April 2006.

Florence Janody

Member of the Jury of the Ph.D Thesis of César S Mendes, Universidade Nova de Lisboa, Lisbon, Portugal, November 2006.

Moisés Mallo

Member of the Jury of the Ph.D. Thesis of César Miguel Pereira Soares Mendes, Universidade Nova de Lisboa, Oeiras, Portugal, November 2006.

Rui Martinho

Member of the Jury of the Ph.D Thesis of Célia Maria Domingues, Universidade de Lisboa, Lisbon, Portugal, March 2006.

Sofia Oliveira

Member of the Jury of the Ph.D Thesis of Ana Coutinho, Universidade de Lisboa, Lisbon, Portugal, October 2006.

Michael Parkhouse

External Review Board Member of the “Red de Investigación de Centros de Enfermedades Tropicales (RICET)”, Madrid, Spain, September 2006.

Examiner of the PhD Thesis of Inês Sampaio de Sousa Soeira “Proliferation signals in normal and malignant B cells”, University of London, London, UK.

Leonor Parreira

Member of the Jury of the Ph.D Thesis of Hélia Neves, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, January 2006.

Member of the Jury of the Ph.D Thesis of Ana Quina, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, January 2006.

Member of the Jury of the Ph.D Thesis of Tiago Carneiro, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, January 2006.

Member of the Jury of the Ph.D Thesis of Cristina Afonso, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, February 2006.

Member of the Jury of the Ph.D Thesis of Teresa Pacheco, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, February 2006.

Member of the Jury of the Ph.D Thesis of Joana Brandão Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, April 2006.

Member of the Jury of the Ph.D Thesis of Maria João Tavares, Faculdade de Medicina, Universidade de Lisboa, Lisbon, July 2006.

Member of the Jury of the Ph.D Thesis of Lara Costa, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, July 2006.

Member of the Jury of the Ph.D Thesis of Teresa Barona, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, July 2006.

Member of the Jury of the Ph.D Thesis of Isabel Jaco, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, October 2006.

Member of the Jury of the Ph.D Thesis of Dinis Calado, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, November 2006.

Member of the Jury of the Agregação of Mário Pinto Simões, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, June 2006.

Member of the Jury of the Agregação of Helena Cortez Pinto.Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, October 2006.

Member of the Jury of the Agregação of José António Conde Belo, Universidade do Algarve, January 2006.

Joaquín Rodriguez- León

Member of the Jury of the Ph.D Thesis, Fernanda Bajanca, University of Lisbon, Lisbon, Portugal, February 2006.

Member of the Jury of the Ph.D Thesis of Sofia Rodrigues, University of Minho, Braga, Portugal, 31 July 2006

Leonor Saúde

Member of the Jury of the Licenciatura Thesis of Raquel Valente Mendes, Universidade Lusófona, Lisbon, Portugal, September 2006.

Helena Soares

Member of the Jury of the Ph.D Thesis of Sofia Bizarro Nolasco da Silva, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, January 2006.

Miguel Soares

Member of the Jury of the Ph.D Thesis of Felipe Monteiro, Instituto de Ciências Biomédicas Abel Salazar da Universidade do Porto, Porto, Portugal, November 2006.

Margarida Souto-Carneiro

Member of the Jury of the Licenciatura Thesis of Célia Ferreira, Universidade de Évora, Évora, Portugal, July 2006.

Member of the Jury of the Licenciatura Thesis of Maria João Lagareiro, Universidade de Évora, Évora, Portugal, September 2006.

Member of the Jury of the Licenciatura Thesis of Isabel Belo, Universidade de Évora, Évora, Portugal, September 2006.

Álvaro Tavares

Member of the Jury of the Ph.D Thesis of Susana Isabel Alves Godinho, Instituto Superior Técnico, Universidade Técnica de Lisboa, Lisbon, Portugal, January 2006.

Member of the Jury of the Ph.D Thesis of Sofia Santos, Instituto Superior Técnico, Universidade Técnica de Lisboa, Lisbon, Portugal, March 2006.

Member of the Jury of the Ph.D Thesis of Célia Domingues, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, April 2006.

Member of the Jury of the Ph.D Thesis of Paulo Jorge Silva Alves, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, April 2006.

Member of the Jury of the Ph.D Thesis of Mariana Pina Lince de Faria, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, May 2006.

Member of the Jury of the Ph.D Thesis of César Mendes, Universidade Nova de Lisboa, Lisbon, Portugal, November 2006.

Member of the Jury of the Ph.D Thesis of Tatiana Moutinho Santos, Instituto de Ciências Biomédicas de Abel Salazar, Universidade do Porto, Porto, Portugal, December 2006.

Sólveig Thorsteinsdóttir

Member of the Jury of the Ph.D Thesis of Fernanda Bajanca, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, February 2006.

Member of the Jury of the Ph.D Thesis of Mário Grãos, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, June 2006.

Member of the Jury of the Ph.D Thesis of Cláudia Vieira, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, July 2006.

Member of the Jury of Post-graduation theses in Biology of the following students: Margarida d'Avó Santos, Frederico Rodrigues, Sílvia Oliveira, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal, July 2006.

HONOURS AND AWARDS

Jorge Carneiro

Vice-President of the Sociedade Portuguesa de Imunologia until October 2006.

Margarida Carneiro

Secretary of the Sociedade Portuguesa de Imunologia from October 2006.

António Coutinho

President of the Sociedade Ciências Médicas de Lisboa.

Andreia Cunha

Best Poster Award. ENNI-MUGEN Summer School 2006 in Advanced Immunology, Sardinia, May 13-20 2006.

Heme oxygenase-1 and carbon monoxide inhibit autoimmune neuroinflammation.

Authors: A. Chora, P. Fontoura, A. Cunha, T. Pais, P.P. Ho, L.Y. Lee, L. Steinman e M.P. Soares.

Jocelyne Demengeot

President of the Sociedade Portuguesa de Imunologia until October 2006.

Maria Francisca Fontes

Scientific Secretary of the Sociedade Portuguesa de Imunologia until October 2006.

Rita Fragoso and Sérgio Dias

Lab Med Prize (“Menção Honrosa”). “The role of FLT-1 in acute Leukemia”.

Bruno Douradinha

Câmara Pestana Award

van Dijk MR, Douradinha B, Franke-Fayard B, Heussler V, van Dooren MW, van Schaijk B, van Gemert GJ, Sauerwein RW, Mota MM, Waters AP, Janse CJ. 2005. Genetically attenuated, P36p-deficient malarial sporozoites induce protective immunity and apoptosis of infected liver cells. Proc Natl Acad Sci USA. 102:12194-9.

Rosalina Fonseca

L'Oreal Award for women in Science, Unesco, L'Oreal Foundation and Fundação para a Ciência e a Tecnologia.

Plasticidade Sináptica na Amígdala: mecanismos celulares de plasticidade heterosináptica no núcleo lateral da amígdala.

Otto-Hahn-Medaille, Max Planck-Gesellschaft for Science Development.

Rules of synaptic plasticity in hippocampal slices of rats.

Luis Graça

Scientific Secretary of the Sociedade Portuguesa de Imunologia from October 2006.

António Jacinto

APIFARMA Prize for Mobility 2006.

Vice-President of the Associação Portuguesa de Biologia do Desenvolvimento.

Rui Martinho

Member of the Direction of the Associação Portuguesa de Biologia do Desenvolvimento.

Sofia Oliveira

Award "Best Scientific Paper 2006" Instituto de Genética Médica Jacinto de Magalhães

Identification of risk and age-at-onset genes on chromosome 1p in Parkinson disease paper.

Michael Parkhouse

President of the Sociedade Portuguesa de Imunologia from October 2006.

Scientific Secretary of the Sociedade Portuguesa de Imunologia until October 2006.

Carlos Penha-Gonçalves

Secretary of the Sociedade Portuguesa de Imunologia until October 2006.

Ricardo Pimenta-Araujo

Treasurer of the Sociedade Portuguesa de Imunologia from October 2006.

Leonor Sarmento

Travel Grant - Cold Spring Harbor Laboratory for "Mechanisms and Models of Cancer" 2006 Meeting Attendance

In vivo characterization of the impact of deregulated RAG1/2 activity to genomic instability.

L'Oreal Award for women in Science, Unesco, L'Oreal Foundation and Fundação para a Ciência e a Tecnologia

The effects of Recombination Activating Genes 1/2 in Genomic Instability.

Citomed Award Immunology 2006

Notch1 modulates timing of G1-S progression by inducing SKP2 transcription and p27Kip1 degradation. J Exp Med, 202 (1): 157-168, 2005.

Human Genetics Portuguese Society Award 2006

Notch1 modulates timing of G1-S progression by inducing SKP2 transcription and p27Kip1 degradation. J Exp Med, 202 (1): 157-168, 2005.

João Pedro Simas

Treasurer of the Sociedade Portuguesa de Imunologia until October 2006.

Helena Soares

Scientific Council President of the Escola Superior de Tecnologia da Saúde de Lisboa, Lisbon, Portugal.

Élio Sucena

Member of the Direction of the Associação Portuguesa de Biologia do Desenvolvimento.

Astrid Vicente

Amélia da Silva de Mello Award for Health Sciences

“Menção Honrosa” José de Mello-Saúde: Hyperserotonemia in Autism Spectrum Disorders: Genetic Basis.

APIFARMA Prize for Mobility 2006.

Santiago Zelenay

Citomed Award to support the participation in international scientific meeting. 2006.

PARTICIPATION OF IGC PERSONNEL IN CONFERENCES, SEMINARS AND SCIENTIFIC MEETINGS

January

Coutinho A.
Immunology Course.
Universidade Madeira, Funchal, Madeira, Portugal.

Gomes G.
Gripenet.
Encontro Anual dos Médicos Sentinela, Grande Hotel do Luso, Portugal.

Parreira L.
Células estaminais. factos, esperanças, incertezas.
Conference on Procriação medicamente assistida, Comissão de Saúde, Assembleia da República, Lisbon, Portugal.

Soares H.
Microtubules and tubulin folding crossroads.
Instituto de Medicina Molecular, Lisbon, Portugal.

Teotónio H.
The empirical study of networks with experimental evolution.
Nescent/NSF meeting integrated studies of genetic networks: A new evolutionary synthesis,
Florida Keys, Florida, USA.

February

Duarte A.
Delta-like 4 determines arterial identity, but how?
Poster at North American Vascular Biology Organization (NAVBO) Developmental Vascular
Biology Workshop II, Asilomar Conference Center, Pacific Grove, California, USA.

Duarte A.
A via de sinalização Notch na regulação do desenvolvimento vascular em mamíferos.
1º Simpósio Nacional de Angiogénese
Faculdade de Medicina, Universidade de Lisboa

Filipe J., Seldon M., Fonseca L., Almeida B., Anratherm J., Soares M. and Simas J.P.
Gammaherpesvirus modulation of NF- κ B.
Keystone Symposia, NF- κ B, Fairmont Banff Springs, Banff, Alberta, Canada.

Gomes G.
Fundamental assumptions in models of reinfection.
Instituto Superior Técnico, Lisbon, Portugal.

Gomes G. and Gökyaydin D.
A Gripe vai à Escola.
Conference to basic and secondary school teachers and students. Auditório Municipal António Silva, Cacém, Portugal.

Moraes F.
Imaging studies of heart outflow tract morphogenesis of wt and Tbx1 mutant mouse embryos.
Poster at Developmental Vascular Biology Workshop II, organized by the North American Vascular Organization (NAVBO), Asilomar Conference Grounds, Monterey, CA, USA.

Prudêncio M., Rodrigues C.D., Martin C., van Gemert G.-J., Sauerwein R.W., Carmo N., Hannus M., Mota M.M.
An RNA interference screen of the kinome to identify host factors important during the liver stage of a malaria infection.
Poster at Keystone Symposium, Malaria: Functional Genomics to Biology to Medicine, Taos, NM, USA.

Ramalho R.R., Soares H., Melo L.V.
Artificial alignment of Microtubules under strong electric fields.
VIII Annual Linz Winter Workshop on Advances in single-molecule research for biology and nanoscience, Linz, Austria.

Rodrigues C.D., Albuquerque S.S., Prudêncio M., Martin C., van Gemert G.-J., Sauerwein R.W., Carmo N., Henriques R., Hannus M., Mota M.M.
Identification of host factors required for liver stage infection by Plasmodium using RNA interference
Keystone Symposium, Malaria: Functional Genomics to Biology to Medicine, Taos, NM, USA.

Saúde L.
Assimétrico por dentro, simétrico por fora.
Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Ciências da Saúde, Minho University, Braga, Portugal.

Soares M.
Alternative targets for immunointervention: HO-1/Biliverdin.
7th Conference of New Trends in Immunosuppression, Berlin, Germany.

Tokaji L., Marinho M., Chora A., Bonaparte D. and Soares M.
Heme Oxygenase-1 (HO-1) prevents septic shock via inhibition of high mobility group box-1 (HMGB1) release.

EMBO Workshop on Innate Danger Signals and HMGB1, San Raffaele Congress Centre, Milano, Italy.

March

Bergman M.L. and Demengeot J.

Selection of antigen-specific regulatory T cells in the thymus: in between positive and negative selection.

Poster at Keystone Symposium: Tolerance, Autoimmunity and Immune Regulation. Breckenridge, Colorado, USA.

Correia S., Reis A.L, Nascimento R., Goodbourn S., Parkhouse R.M.E.

Identification of non-assigned, non-homologous virus genes inhibiting interferon responses.

Poster at Annual Meeting of the Society General Microbiology, Warwick, UK.

Elias R., Seixas E. and Coutinho A.

The role of TLR2 and TLR9 signaling pathways during polyclonal activation of splenic B cell during *P. chabaudi* infection.

Poster at Recent Advances in Pattern Recognition-Toll 2006, Salvador, Brazil.

Filipe J., Seldon M., Fonseca L., Almeida B., Anrather J., Soares M.P. and Simas J.P. Gammaherpesvirus modulation of NF- κ B.

Poster at Keystone Symposium, Banff, Canada.

França A.R., Mota M. and Coutinho A.

Toll-like receptors in the hepatic stage of malária infection.

Poster at Recent Advances in Pattern Recognition-Toll 2006, Salvador, Brazil.

Gomes A., Alcobia I., Oliveira S., Cidadão A.J., Parreira L.

Notch signaling in mouse embryonic hematopoietic development: The effect of HoxB4 overexpression.

BSCB Annual Spring Meeting, York, UK.

Gomes G.

Tuberculosis epidemiology.

Seminário de Sistemas Dinâmicos. Centro de Matemática, Universidade do Porto, Porto, Portugal.

Gomes G.

Epidemiological consequences of imperfect immunity.

Centro de Física Teórica e Computacional, Universidade de Lisboa, Lisbon, Portugal.

Gomes G. and Parreira L.

Áreas de Fronteira. Cruzamento de Conhecimentos.

XII Congresso Nacional de Medicina, Ordem dos Médicos, Porto, Portugal.

Hilker F.

Bogdanov-Takens bifurcations in an epidemic model.

Centro de Matemática e Aplicações Fundamentais, Universidade de Lisboa, Lisbon, Portugal.

Lourenço R., Lopes S., Gonçalves, A. and Palmeirim I. and Saúde L.

The role of terra during left-right establishment.

BSDB/BSCB Spring Meeting 2006, York University, York, UK.

Mallo M.

Hox genes and signaling pathways.

EMBO/SEMM workshop on Homeodomain Proteins, Hematopoietic Development and Leukemias, Riva del Garda, Italy.

Nascimento R.; Parkhouse R.M.E.

The herpesviruses UL24 gene induces G2 arrest by inactivation of the Cyclin B/cdc2 complex

Poster at Annual Meeting of the Society General Microbiology, Warwick; UK.

Oliveira S.

Genética dos AVCs.

Faculdade de Farmácia, Porto University, Porto, Portugal.

Parreira L.

A Mulher na Ciência.

Assembleia da República. Lisbon, Portugal.

Parreira L.

Células Estaminais.

XII National Congress on Medicine, Porto, Portugal.

Parreira L.

Science Within.

World Congress for Freedom of Scientific Research, Rome, Italy.

Reis A.L., Leitão A., Parkhouse R.M.E.

Longitudinal antibody responses to the principal serological immunodeterminants of African Swine Fever Virus (ASFV).

Poster at Annual Meeting of the Society General Microbiology, Warwick, UK.

Soares H.

Participação dos componentes da via de folding da tubulina na montagem e dinâmica de estruturas de microtúbulos.

Jornadas de Biotecnologia, Núcleo de Engenharia Biotecnológica, Algarve University, Faro, Portugal.

Tomás A.R., Brito R., Rodríguez-Léon J.

Role of FLRT3 in the control of Apical Ectodermal Ridge activity and limb outgrowth during vertebrate development.

Poster at British Society for Developmental Biology 2006, Spring Meeting, York, UK.

Zelenay S., Chora A., Soares M.P. and Demengeot J.

Regulatory T cells control early innate immune responses.

Keystone Symposium: Tolerance, Autoimmunity and Immune Regulation, Breckenridge, Colorado, USA.

April

Benedito R.

Notch ligand Delta-like 4 in arterial endothelial cell function.

Poster at British Society of Developmental Biology Annual Meeting, Warwick, UK.

Campos, M.G., Dias, S., Mota, M.M.

The role of VEGF during a malaria infection.

Poster at 2nd Annual BioMalPar Conference on the Biology and Pathology of the Malaria Parasite, Heidelberg, Germany.

Coutinho A.

2nd Riken Research Center for allergy and Immunology Advisory Committee, Kanagawa, Japan.

Demengeot J.

Chairperson of the IX Workshop of the EWPSLE (European Working Party on Systemic Lupus Erythematosis), Porto, Portugal.

Feijó J.A.

The control of apical cell growth and morphogenesis by ion dynamics.

Friday seminar lecture series, John Innes Research Center, Norwich, UK.

Godinho-Ferreira M.

Consequences of telomere uncapping in fission yeast.

Instituto de Microbiología Bioquímica, Salamanca, Spain.

Graça L.

Células T reguladoras e indução de tolerância imunitária.

XIII Portuguese Congress on Reumatology, Ponta Delgada, Portugal.

Lourenço R., Lopes S., Gonçalves, A. and Palmeirim I. and Saúde L.

The role of terra during left-right establishment.

European Network of Excellence Cells into Organs, Plenary Meeting 2006, Cambridge, UK.

Moraes-Fontes M.F

Co-chairman: Round Table discussion: The genetics of SLE.

IX Workshop of the EWPSLE, European Working Party on Systemic Lupus Erythematosus, Porto, Portugal.

Parreira L.

Biologia de células estaminais.

XIII Portuguese Congress on Reumatology, Ponta Delgada, Açores, Portugal.

Pereira Leal J.B.

Evolution of protein interactions in complexes and networks Genes and Systems Biology Seminar series, Biocenter Oulu Oulu, Finland.

Soares M.

Heme Oxygenase-1: A therapeutic target to overcome the rejection of transplanted organs.

International society for heart and lung transplantation, 26th annual meeting and scientific sessions, Madrid, Spain.

Tomás A.R., Afonso N., Rodríguez-Léon J., Jacinto A.

Role of FLRT3 during vertebrate development and regeneration.

II Annual Meeting of the European Network of Excellence "Cells Into Organs", Cambridge, UK.

May

Belo J.A.

Establishing asymmetries in the early vertebrate embryo.

CNC, Coimbra University, Coimbra, Portugal.

Bento M., Tavares A.T. and Belo J.A.

Subtractive cloning of differentially expressed genes in chick heart/hemangioblast precursor cells (H/HPC).

1st Annual International Meeting of the Portuguese Society for Stem Cells and Cellular Therapies, SPCE-TC, Funchal, Madeira, Portugal.

Chora A., Fontoura P., Cunha A., Pais T.F., Cardoso S., Ho P.P., Lee L.Y., Sobel R.A., Steinman L. and Soares M.

Heme oxygenase1 and carbon monoxide suppress autoimmune neuroinflammation.
1st Annual ENII-MUGEN immunology Summer School 2006. Capo Caccia, Sardinia, Italy. (1st prize for best student presentation).

Correia C.

Role of brain-derived neurotrophic factor (BDNF) in autism etiology.
Dia do Jovem Investigador, Instituto Nacional de Saúde Dr. Ricardo Jorge, Lisbon, Portugal.

Demengeot J.

Intercontinental Network for mouse mutants depository.
FIMRe Meeting, Tsukuba, Japan.

Duarte J.

Foxp3 Expression During Development and Evolution.
Poster at ENII-MUGEN Immunology Summer School, Capo Caccia, Sardinia, Italy.

Feijó J.A.

The control of apical cell growth and morphogenesis by ion dynamics.
Genetics Society- Arabidopsis Meeting, Univ. Cambridge, UK.

Gomes G.

Epidemiological consequences of imperfect immunity.
Colóquio de Matemática, Centro de Matemática, Universidade do Porto, Porto, Portugal.

Graça L.

CD4+ regulatory T cells and transplantation tolerance.
1st International Symposium on Transplant Immunotolerance, Murcia, Spain.

Graça L.

Modulating T cell activation thresholds via the DC: a strategy for peripheral regulatory T cell generation?
DC-Thera, European Network of Excellence, Annual Meeting, Alghero, Italy.

Graça L.

Indução terapêutica de células T reguladoras e tolerância imunitária.
Departmental Seminar, Escola de Ciências de Saúde, Universidade do Minho, Braga, Portugal.

Mallo M. Hox genes and the mouse skeleton.

Minho University, Braga, Portugal.

Mallo M. Hox genes in development. Is there anything new?

Hannover Medical School, Hannover, Germany.

Mantilla-Beniers N.

IV International Conference on the Ecology and Evolution of Infectious Diseases, University of Pennsylvania, State College, PA, USA.

Martins M., Correia C., Coutinho A. M., Lourenço L., Sousa I., Currais A., Bárrio T., Marques C., Miguel T. S., Ataíde A., Bento C., Morgadinho T., Oliveira G., Vicente A.M.

A candidate gene strategy to study autism: association studies and endophenotypes.

Dia do Jovem Investigador, Instituto Nacional de Saúde Dr. Ricardo Jorge, Lisbon, Portugal.

Moraes-Fontes M.F

Autoimunidade

National Congress on Dermatologia e Venereologia , Porto, Portugal

Moraes-Fontes M.F

Terapêutica Dirigida nas Doenças Autoimunes Alvos terapêuticos: perdidos e achados.

XII National Congress on Internal Medicine, Porto, Portugal.

Oliveira S.

Genética da Doença Cerebral Vascular.

XII National Congress on Internal Medicine, Porto, Portugal.

Parkhouse R.M.E.

Principles of vaccine design.

Lecture at Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal.

Parkhouse R.M.E.

Virus Host Interaction.

Symposium on Virus/Host Interaction, Institute of Animal Health, Pirbright, UK-

Ramalho R.R., Soares H. and Melo L.V.

Microtubule behavior under strong electromagnetic fields.

Poster at Symposium A, The E-MRS 2006 Spring Meeting, Nice, France.

Vicente A.M.

Epidemiology of autism in Portugal.

Autism Speaks-CDC International autism epidemiology network planning meeting, Montreal, Canada.

June

Albuquerque S.S., Rodrigues C.D., Prudêncio M., Mota M.M.

Hepatocyte genes functionally required for P. berghei sporozoites development.

12th International Congress on Infectious Diseases, Lisbon, Portugal.

Cachaço A.S. and Dias S.

Extracellular matrix molecules and their receptors undergo cell- and type-specific turnover during bone marrow recovery following irradiation: relevance for organ homeostasis and in malignancy.

Poster at 18th Pezcoller Symposium on Tumor Microenvironment: Heterotypic Interactions, Trento, Italy.

Campos, M.G., Dias, S., Mota, M.M.

The role of VEGF during a malaria infection.

Poster at 12th International Congress on Infectious Diseases”, Lisbon, Portugal.

Carapuço M.

Hox genes activity in the presomitic mesoderm.

Society for Developmental Biology, 65th Annual Meeting, Ann Arbor, Michigan, USA.

Carvalho S.

The cost of dioecy under different mutational loads in *C. elegans*.

XII European Meeting of PhD. Students in Evolutionary Biology; St. Andrews University, Scotland.

Casalou C., Fragoso R. and Dias S.

Cytoskeleton stability affects leukemia cell migration via FLT-1, involving RhoA and Rac1 activation and lipid raft/caveolae formation.

Poster at 18th Pezcoller Symposium on Tumor Microenvironment: Heterotypic Interactions, Trento, Italy.

Coutinho A.

Vacinas, alergias e doenças auto-imunes.

Opening conference XXI Semana de Medicina Interna do Hospital de Sta. Marta, Hotel Tivoli, Lisbon, Portugal.

Demengeot J.

European Life Sciences Forum (ELSF), research infrastructures for the life sciences, Vienna, Austria

Feijó J.A.

Live cell imaging methods: new tools and old tricks.

CNIO-Leica Advanced. Live Cell Microscopy Workshop, Madrid, Spain.

Fragoso R. and Dias S.

The role of FLT-1 in acute leukaemia.

Annual Meeting of the European Hematology Association, Amsterdam, The Netherlands.

Fragoso R. and Dias S.

Evidence for Distinct Molecular and Phenotypic changes during Endothelial Progenitor Differentiation.

Annual Meeting of the European Hematology Association (EHA), Amsterdam, The Netherlands.

Gomes G.

Modelos matemáticos na epidemiologia do século XXI.

Encontro Nacional da Sociedade Portuguesa de Matemática, Instituto Superior de Engenharia de Lisboa, Lisbon, Portugal.

Gregoire I.P., A.M. Correia, S.M Sanz-González and M.P. Soares.

Heme oxygenase-1 derived carbon monoxide inhibits atherosclerosis.

XIV International Symposium on Atherosclerosis, Fiera di Roma, Rome, Italy.

Mallo M.

What determines functional specificity of Hox genes?

III National Course on Genetics, Carmona, Spain.

Oliveira S.

Genetic Epidemiology Overview.

Lisbon University, Lisbon, Portugal.

Pereira Leal J.B.

The constraints that protein interactions place on the functional divergence of gene duplicates.

Biological Networks III: Modularity and Genome Evolution Bertinoro, Italy.

Ramalho R.R., Soares H. and Melo L.V.

Microtubule behavior under strong electromagnetic fields.

Scanning Probe Microscopy Conference, Sensors and Nanostructures, La Grande Motte, Montpellier, France.

Tavares A.

Drosophila Tctp is required for viability and cytoskeleton organization.

III Drosophila Cell Division Cycle Workshop, Porto, Portugal.

July

Belo J.A.

Role of AVE and AVE expressed genes in the patterning of the early vertebrate embryo.

III Workshop on Early Developmental Processes in Vertebrates, University of Dresden, Dresden, Germany.

Coutinho A.
Conferência sobre o Ensino Superior.
Fundação Calouste Gulbenkian, Lisbon, Portugal.

Fernandes P.
Workshop: Digitalização de Coleções Biológicas, Instituto de Apoio à Criança, Braga, Portugal.

Filipe J., Seldon M., Fonseca L., Almeida B., Anrather J., Soares M.P. and Simas J.P.
Gammaherpesvirus modulation of NF- κ B.
Poster at 31th International Herpesvirus Workshop, Seattle, USA.

Gomes G.
Epidemiologia, Jornadas na área da saúde.
Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal.

Miranda M.P., Alenquer M., Marques S., Rodrigues L., Lopes F., Bustelo X.R. and Simas J.P.
The interaction of murine gammaherpesvirus-68 M2 protein with Vav and Src tyrosine kinases.
Poster at 31th International Herpesvirus Workshop, Seattle, USA.

Silva A.C., Filipe M., Vitorino M., Marques S., Steinbeisser H. and Belo J.A.
Expression pattern of *Xenopus* orthologs of novel genes expressed in the mouse AVE. Poster at III Workshop on Early Developmental Processes in Vertebrates. University of Dresden, Dresden, Germany.

Soares M.
Heme Oxygenase-1 Is a "Protective Gene" That Prevents The Pathogenesis of "Inflammatory Diseases".
Strategies for Immune Intervention 2006, From Bench to Bedside.. Dorint Hotel Erlangen, Germany.

Tomás A.R., Brito R., Izpisúa-Belmonte J.C., Rodriguez-Leon J.
Role of FLRT3 in the control of Apical Ectodermal Ridge activity and limb outgrowth during vertebrate development
Poster at EMBO Course on Molecular Mechanisms of Development, Barcelona, Spain.

Xavier K. B. and Bassler B. L.
Interference with AI-2-mediated quorum sensing.
II FEMS Congress of European Microbiologists. Madrid. Spain.

August

Albuquerque S.S., Rodrigues C.D., Prudêncio M., Mota M.M.

Hepatocyte genes functionally required for *P. berghei* sporozoites development.

Poster at 11th International Congress of Parasitology (ICOPA XI), SECC, Glasgow, Scotland.

Godinho-Ferreira M.

Living at the edge of the chromosome: The fate of dysfunctional telomeres through the cell cycle.

CNIO, Madrid, Spain.

Sarmiento L.

In vivo characterization of the impact of deregulated RAG1/2 activity to genomic instability.

Poster at Mechanisms and Models of Cancer, Meeting of the Cold Spring Harbor Laboratory, New York, USA.

September

Afonso N., Simões M., Rodriguez-Leon J., Izpisúa-Belmonte J.C., Jacinto A.

Role of FLRT3 during the regeneration of the caudal fin of adult zebrafish.

Poster at EMBO conference series, 'Cellular and Molecular Basis of Regeneration and Tissue repair', Ascona, Switzerland.

Aguiar M. and Stollenwerk N.

Criticality in dengue: Interesting dynamics in the epidemiology of dengue fever.

Poster at Dynamics Days Europe, Crete, Greece.

Almeida S., Oliveira V., Parkhouse R.M.E.

Impact of B/T cell restricted transgenic expression of a viral host evasion gene.

Poster. 1st Joint meeting of European National Societies of Immunology- 16th European Congress of Immunology, Paris, France.

Costa G. and Tavares A.

Is Sgt1 need for kinetochore function?

II Workshop on Spindle Dynamics, Évora, Portugal.

Coutinho A.

Signature of the Protocol of Cooperation between the Centro Nacional de Biotecnología (Spain), the Centro de Astrobiología (Spain) and the Instituto de Neurobiología, Ramón Y-Cajal (Spain) of the Consejo de Investigaciones Científicas and the Laboratório Associado ITQB/IGC/IBET (Portugal).

Centro de Astrobiología, Madrid, Spain.

Coutinho A.

A Origem da Vida.

Conferences Cycle of NUCLIO (Nucleo Interactivo de Astronomia), Planetário Calouste Gulbenkian, Lisbon, Portugal.

Coutinho A.

Chairman of the conference “Responsabilidades e responsabilização na gestão da Saúde em Portugal”.

II Conferência Nacional de Farmacoeconomia, Hospital de Santa Maria, Lisbon, Portugal.

Demengeot J.

Chairperson of the European Congress of Immunology, EFIS, Paris, France

Demengeot J.

Chairperson of the Workshop Les Pensieres-Fondation Mérieux. Control of antitumoral and anti-infectious immune responses by Regulatory cell subsets: potential clinical applications, Veyrier du Lac, France.

Demengeot J.

Physiopathology of immuno-inflammation and its regulation.

XII International Conference on Behçet's Disease, Lisbon, Portugal.

Feijó J.A.

The control of apical cell growth and morphogenesis by ion dynamics.

Dept. of Molecular Genetics, Univ. Utrecht, The Netherlands.

Feijó J.A.

Two-photon fluorescence in plant sciences.

FEBS Course on Microspectroscopy, Univ. Wageningen, The Netherlands.

Godinho-Ferreira M.

Fission yeast dysfunctional telomeres escape damage checkpoints while undergoing DNA repair.

Poster at Telomeres and Genome Stability. Villars, Switzerland.

Gomes G.

Mathematical models for epidemic and pandemic influenza.

V Fórum Internacional de Investigadores Portugueses, Universidade do Porto, Porto, Portugal.

Gomes G.

Gripenet.

IV Congresso da Associação Portuguesa de Epidemiologia, Cascais, Portugal.

Gonçalves L., Filipe M., Bento M., Silva A.C., Steinbeisser H. and Belo J.A. Comparative expression of Xshisa homologues in mouse, chicken and Xenopus (Xshisa-2) during early development.

Poster at BSDB Autumn Meeting 2006. University of Dundee, Dundee, Scotland.

Graça L.

Transplantation Tolerance.

XVI European Congress of Immunology, Paris, France.

Krug T.

Comparison of gene expression profiles in peripheral blood mononuclear cells of Behçet's disease patients and controls.

XII International Conference on Behçet's Disease, Lisbon, Portugal.

Mallo M.

Sculpting the skeleton: Hox genes at work.

EMBO Practical course, Zagreb, Croatia.

Moraes-Fontes M.F

Decreased Frequency and Number of Regulatory T Cells in Patients Presenting with Behçet's Disease.

XII International Conference on Behçet's Disease, Lisbon, Portugal.

Oliveira S.

Moderator at XII International Conference on Behçet's Disease, Lisbon, Portugal.

Oliveira V.

CD62L+CD25+CD4+ regulatory T cells generated in vitro by anti-CD4 treatment Express FoxP3 and can prevent rejection of allogeneic skin transplants.

RCAI International Summer Program, Riken Research Center for Allergy and Immunology, Yokohama, Japan.

Oliveira V., Almeida S., Parkhouse R.M.E.

Murine -Herpes Virus exploitation of B cell biology.

Poster. 1st Joint meeting of European National Societies of Immunology- 16th European Congress of Immunology, Paris, France.

Parkhouse R.M.E.

Workshop organiser and introductory lecture, First Joint Meeting of National Society of Immunology and 16th

European Congress of Immunology, Paris, France.

Parkhouse R.M.E.

Organiser and Symposium Chairman, 7th International Congress of Veterinary Virology, Faculdade de Medicina Veterinária, Lisbon, Portugal.

Parreira L.

Hematopoietic Stem Cells.

Young European Scientist Meeting. Porto, Portugal.

Saúde L.

A importância da definição de territórios assimétricos vs. simétricos durante o desenvolvimento embrionário.

Hospital de São João, Porto, Portugal.

Seixas E., Moura Nunes J.F., Matos I. and Coutinho A.

Dendritic cell activation by Plasmodium. is contact dependent and involves TLR4 and TLR9
Poster at Molecular Parasitology Meeting, Woods Hole,, Massachusetts, USA.

Sepúlveda N.

Que genes controlam as proporções das diversas populações celulares do timo?

XIV Congresso da Sociedade Portuguesa de Estatística, Covilhã, Portugal.

Tavares A.

Cell proliferation in Drosophila: Mob rules.

ZMBH, Heidelberg, Germany.

Tavares A.

Cell proliferation in Drosophila: Mob rules.

II Workshop on Spindle Dynamics, Évora, Portugal.

Teotónio H.

C. elegans as a model system for experimental evolution.

Department of Ecology and Evolutionary Biology, University of Arizona, Tucson USA.

Truccolo J., Vigarito AM., Rodrigues R., Regnault B. , Becker J. and Pied S.

A genomic view to study in vivo and in vitro, cell interactions during malaria neuropathology.

Poster at ECI-Paris 2006 Congress, Paris, France.

Vicente A.M.

A prevalence study in Portugal.

Panel of Experts on Autistic Spectrum Disorders - European Autism Information System (EAIS) Project, Luxembourg.

Vigário A.M., Cruz T., Dujardin H., Voegtle D., Bandeira A., Pied S.
Regulatory CD4+CD25highFoxp3+ T cells in Plasmodium berghei infection.
Poster at 16th European Congress Immunology, Paris, France.

Vinagre T.
Mechanisms of Hox functional specificity, EMBO Practical course, Zagreb, Croatia.

October

Belo I., Raposo B., Lagareiro M.J., Agua-Doce A.M., Faro J., Souto-Carneiro M.
Influence of CD25 Depletion in the Germinal Center Reaction after a Primary Immunization.
I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa, Évora, Portugal.

Carneiro J.
Immunology.
Workshop Where is theoretical Biology Heading. Tenth Anniversary of the Institute for Theoretical Biology. Berlin, Germany.

Coutinho A.
Chairman of the conference "Valores cognitivos: conhecimento científico e filosófico".
Gulbenkian Conference "Que valores para este Tempo?", Fundação Calouste Gulbenkian, Lisbon, Portugal.

Demengeot J.
Chairperson of the Sociedade Portuguesa de Imunologia's XXXII Annual Meeting, Braga, Portugal.

Demengeot J.
Regulation of B cell differentiation to antibody secreting cells.
I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa, Évora, Portugal.

Duarte J.
Assessing the role of natural regulatory T cells in a non-lymphopenic system.
Poster at Sociedade Portuguesa de Imunologia's XXXII Annual Meeting, Braga, Portugal.

Faro J.
I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa, Évora, Portugal.

Ferrari L., Gardner R. and Carneiro J.
Statistical analysis of the quantitative determination of lymphocyte receptor diversity based on microarray hybridization.
Poster at Sociedade Portuguesa de Imunologia's XXXII Annual Meeting, Braga, Portugal.

Ferreira C., Belo I., Lagareiro M.J. and Souto-Carneiro M.
Effect of castration in the germinal center reaction after a primary immune response.
I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa Évora, Portugal.

Gardner R., Ferrari L. and Carneiro J.
Quantitative Determination of Lymphocyte Repertoire: Analysis of antigen-receptor diversity estimation based on gene-chip hybridization technology.
Poster at I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa Évora, Portugal.

Gordo I.
Patterns of genetic variation in pathogen populations.
IV Encontro IST/FML de Engenharia Biomédica, Instituto Superior Técnico, Lisboa, Portugal.

Gordo I.
Evolução experimental em Escherichia coli: a taxa e o efeito das mutações que alteram o fitness.
IV Forum da Quimica, Universidade Nova de Lisboa, Monte Caparica, Portugal.

João C., Pires E., Porrata L.F., Markovic S., Gomes da Silva M.
Reconstitution of T cell population after autologous hematopoietic stem cell transplantation is improved by administration of immunoglobulin - Preliminary results of an animal study.
Poster at I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa Évora, Portugal.

João C., Geyer S., Markovic S., Gertz M., Lacy M., Dispenzieri M., Kumar S., Hayman S., Gastineau D., Porrata L.F.
Recovery of polyclonal immunoglobulin serum levels to normal levels after autologous stem cell transplantation predicts disease free survival in patients with multiple myeloma.
Poster at I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa Évora, Portugal.

Lagareiro M.J., Henriques R., Belo I., Ferreira C., Raposo B., Souto-Carneiro M.M.
Second harmonic generation as a novell tool for accessing collagen network disruption in cartilaginous tissue of arthropathies.
I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa Évora, Portugal.

Mallo M.
Hox genes in hematopoiesis and development: anything in common?
Erasmus Medical Center, Rotterdam, Holland.

Martins M, Correia C, Currais A, Coutinho AM, Marques C, Ataíde A, Miguel TS, Almeida J, Bento C, Morgadinho T, Oliveira G, Vicente AM.
Association of the GAD1 Candidate Gene with Autism.
Annual Meeting of the American Society of Human Genetics, New Orleans, USA.

Oliveira S.

Identification of susceptibility genes for Behçet's disease using the genomic convergence approach.

Poster at American Society for Human Genetics Meeting, New Orleans, USA.

Oliveira S.

Moderator at American Society for Human Genetics Meeting, New Orleans, USA.

Parkhouse R.M.E.

Host-pathogen interaction: a reciprocal two edged sword.

Workshop on "Inflammatory Type of Diseases", Universidade de Braga, Braga, Portugal.

Parkhouse R.M.E.

Symposium Chairman, 32nd Annual Meeting of the Sociedade Portuguesa de Immunologia, Universidade de Braga, Braga, Portugal.

Parkhouse R.M.E.

Host-Pathogen Interaction.

1st Mediterranean Workshop on Clinical Immunology, Évora, Portugal.

Parreira L.

Making Blood from Embryonic Stem Cells. IVth Meeting on Biomedical Engineering. Instituto Superior Técnico, Lisbon, Portugal.

Sarmiento L.

In vivo characterization of the impact of deregulated RAG1/2 activity to genomic instability
Poster at Sociedade Portuguesa de Imunologia's XXXII Annual Meeting, Braga, Portugal.

Sepúlveda N. and Carneiro J.

Genetic mapping of the proportions of different thymocyte populations in mice.

Poster at Sociedade Portuguesa de Imunologia's XXXII Annual Meeting, Braga, Portugal.

Sepúlveda N. and Carneiro J.

Genetic mapping of the proportions of different thymocyte populations in mice.

Poster at I Mediterranean Workshop on Clinical Immunology, Hotel da Cartuxa Évora, Portugal.

Soares H.

The puzzling players of tubulin folding pathway in cytoskeleton. Marie Curie Research Training Network workshop on Spindle Dynamics, Évora, Portugal.

Soares M.

Heme Oxygenase-1: A therapeutic target to overcome the rejection of transplanted organs.
Annual scientific meeting of the Austrian Society of Transplantation, Fuschl, Austria.

Soares M.

Heme Oxygenase-1: A protective gene that counters the development of inflammatory diseases.

XXXI Meeting of the Brazilian Society for Immunology, Buzios, RJ, Brazil.

Tavares A.

Using Drosophila in cancer research: Mob a new tumor suppressor

IPO, Lisbon, Portugal.

November

Carneiro J.

When three is not a crowd: The crossregulation model of regulatory T cells dynamics and repertoire selection.

Workshop: IT2006 - Cancer Immunotherapy: Targeting Complexity. Havana, Cuba.

Correia C, Martins M, Coutinho A M., Marques C., Miguel T., Ataide A, Almeida J., Borges L., Gallagher L., Conroy J., Gill M., Oliveira G., Vicente A. M.

Association of the $\alpha 4$ integrin subunit gene with autism

XIV World Congress on Psychiatric Genetics, Cagliari, Italy.

Demengeot J.

Regulatory T cells, lesson from microbial infection.

XIV Annual Congress of the European Society of Gene Therapy, Athena, Greece.

Demengeot J.

Workshop Contribution of Immunology to new concepts in biology, past and future, Arrabida, Portugal.

Faro J. and Gordo I.

Evolutionary forces driving the germinal center reaction: differential effects of Ab diversity vs higher affinity.

International Workshop ImmunoTherapy-2006: Targeting complexity. PanAmerican Health Organization (PAHO) & Center of Molecular Immunology (CIM). Havana, Cuba.

Gomes G. and Pita Costa J.

Gripenet, com as TIC colaborar com os cientistas e construir a Europa.

Centro de Competencia CRIE-FCUL, Lisbon, Portugal.

Graca L.

Reprogramming the immune system towards tolerance.

Departmental Seminar, Institut Pasteur, Paris, France.

Martins M, Correia C, Currais A, Coutinho AM, Marques C, Ataíde A, Miguel TS, Almeida J, Bento C, Morgadinho T, Oliveira G, Vicente AM. Association of the GAD1 candidate gene with autism.

XIV World Congress on Psychiatric Genetics, Cagliari, Italy.

Martins M., Coutinho A.M., Correia C., Currais A., Marques C., Ataíde A., Miguel T.S., Almeida J., Bento C., Morgadinho T., Borges L, Oliveira G., Vicente A.M.

The GAD1 gene is associated with autism and interacts with SLC6A4 in the determination of platelet serotonin levels.

Annual Meeting of the Human Genetics Portuguese Society, Coimbra, Portugal.

Oliveira S.

Moderator at 7º Simpósio do Núcleo de Estudos da Doença Vascular Cerebral da Sociedade Portuguesa de Medicina Interna, Porto, Portugal.

Parreira L.

Células Estaminais. Perspectivas futuras na Genética.

10ª Meeting of the Genetics Portuguese Society, Coimbra, Portugal.

Parreira L.

Notch na hematopoiese embrionária.

Annual Meeting of the Hematology Portuguese Society, Viseu, Portugal.

Soares M.

Heme Oxygenase-1 is a “Master-Switch” in the pathogenesis of inflammatory diseases: severe acute malaria.

Second European Society of Hematology, Club du Globule Rouge et du Fer Euroconference on Disorders of Fe homeostasis, erythrocytes and erythropoiesis, Cascais, Portugal.

Soares M.

Ischemia and reperfusion injury: pathways to injury and cytoprotection.

European Society for Organ Transplantation, The Hesperis Course, Lyon, France.

Soares M.

The vascular endothelium: from homeostasis to pathology.

X Congresso Internacional da Sociedade Portuguesa de Cirurgia Cardio-Torácica e Vasculuar, Hotel Vila-Sol, Vilamoura, Portugal.

Truccolo J., Vigarão AM., Rodrigues R., Regnault B., Becker J. and Pied S.

Genomic approach to study in vivo and in vitro, cell interactions during malaria neuropathology.

Poster at Journées Départementales d'Immunologie, Dourdan, France.

December

Bajanca F., Luz M., Raymond K, Martins GG, Sonnenberg A., Tajbakhsh S., Buckingham M. and Thorsteinsdóttir S.

Integrin $\alpha 6 \beta 1$ -laminin interactions regulate early myotome formation in the mouse embryo.
Poster at XVth National Congress of Biochemistry, Universidade de Aveiro, Aveiro, Portugal.

Bajanca F., Luz M., Raymond K, Martins GG, Sonnenberg A., Tajbakhsh S., Buckingham M. and Thorsteinsdóttir S.

Integrin $\alpha 6 \beta 1$ -laminin interactions regulate early myotome formation in the mouse embryo.
Poster at XLI Congress of the Portuguese Society for Microscopy, Braga, Portugal.

Bettencourt-Dias M., Rodrigues-Martins A., Riparbelli M., Gatt M.K., Ferreira I., Ferreira C., Callaini G., Glover D.M.

Dissecting SAK/PLK4 function in templated and de novo formation of centrioles.
Poster at American Society for Cell Biology Meeting, San Diego, USA.

Carvalho S. and Duque P.

Alternative splicing of an Arabidopsis RING E3 ubiquitin ligase involved in plant stress and development.

RNA 2006 - III National Meeting on RNA Biology (Sociedade Portuguesa de Bioquímica/Instituto de Engenharia Electrónica e Telemática de Aveiro), Aveiro, Portugal.

Carvalho R. And Duque P.

Role of the Arabidopsis SR protein family in plant stress responses.

Poster at RNA 2006 - III National Meeting on RNA Biology (Sociedade Portuguesa de Bioquímica/Instituto de Engenharia Electrónica e Telemática de Aveiro), Aveiro, Portugal.

Certal A.C., Oliveira-Pinheiro A., Carvalho L. and Rodríguez-León J.

Dynamic extracellular ion fluxes are involved in fin regeneration in zebrafish.

Poster at Annual Meeting of the Portuguese Biochemical Society, Aveiro University, Aveiro, Portugal.

Certal A.C., Santos M.R., Milagre C. and Rodríguez-León J.

Erg1, an outward-rectifier potassium channel, is involved in the regulation of cell proliferation and apoptosis during limb development.

Poster at Annual Meeting of the Portuguese Biochemical Society, Aveiro University, Aveiro, Portugal.

Costa G. and Tavares A.

Poster "Drosophila kinetocore protein profile.

Poster at XV National Congress Biochemistry, Aveiro, Portugal.

Coutinho A.

A investigação biomédica e a prática clínica.

Gulbenkian Saúde Conference, A Medicina e os Sinais dos Tempos, Fundação Calouste Gulbenkian, Lisbon, Portugal.

Coutinho A.

Swedish Research Council

Stockholm, Sweden.

Florindo C, Silva M. and Tavares A.

Characterization of the tumor suppressor Mob4.

Poster at XV National Congress Biochemistry, Aveiro, Portugal.

Fragoso R., Casalou C. and Dias S.

The involvement of cholesterol in FLT-1 function on acute leukemia cells.

Poster at Annual meeting of the American Society of Hematology (ASH), Orlando, USA.

Fragoso R. and Dias S.

The role of VEGFR-1 (FLT-1) in B cell differentiation and function.

Poster at Annual meeting of the American Society of Hematology (ASH), Orlando, USA.

Godinho-Ferreira M.

Cell cycle determines the fate of dysfunctional telomeres in fission yeast.

XV National Congress of Biochemistry, Aveiro, Portugal.

Gomes G.

Ecological and immunological factors in tuberculosis transmission and control.

MEEGID VIII Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases, Bangkok, Thailand.

Gomes G.

XXII Congresso de Pneumologia, Estoril, Portugal.

Gomes G., Rodrigues P., van Noort S.

Epidemiological consequences of strain competition and adaptation.

Workshop on Immuno-Epidemiology, DIMACS - Center for Discrete Mathematics and Theoretical Computer Science, Rutgers, New Jersey, USA.

Gonçalves L., Filipe M., Bento M., Silva A.C., Steinbeisser H. and Belo J.A. Comparative expression of Xshisa homologues in mouse, chicken and Xenopus (Xshisa-2) during early development.

XV Congresso Nacional de Bioquímica at University of Aveiro, Aveiro, Portugal.

Lopes S., Pacheco L. and Saúde L.

Terra function in the determination of left-right identity: the importance of the zebrafish Kupffer's vesicle (KV).

XVth National Congress of Biochemistry, Universidade de Aveiro, Aveiro, Portugal.

Lourenço R. Gonçalves A., Palmeirim I. and Saúde L.

Terra is a left-right asymmetry gene crucial to maintain bilateral symmetry of the segmentation clock.

XVth National Congress of Biochemistry, Universidade de Aveiro, Aveiro, Portugal.

Magalhães, S.

Experimental evolution of host range under environmental heterogeneity using spider mites.

Poster at ESF Workshop on Metapopulation dynamics and life-history evolution; Montpellier, France.

Martins G.G., Rifes P., Amandio R., Thorsteinsdóttir S.

3D imaging cell-cell and cell-matrix interactions in vertebrate embryos.

Poster at XLI Congress of the Portuguese Society for Microscopy, Braga, Portugal.

Mendes R., Lourenço R., Martins G. and Saúde L.

Do cells from the left and the right side of Hensen's node have different migration pathways?

XVth National Congress of Biochemistry, Aveiro University, Aveiro, Portugal.

Nolasco S., Bellido J., Gonçalves J., Zabala J.C. and Soares H.

Tubulin Cofactor A (TBCA) is required for cell viability.

The ACSB 46th Annual Meeting, San Diego, CA, USA.

Pascoal S., Andrade R.P., Martins G.G., Bajanca F., Palmeirim I.

Progressive mRNA decay establishes an *mkp3* expression gradient in the chick limb bud.

Poster at XLI Congress of the Portuguese Society for Microscopy, Braga, Portugal.

Pereira F., Costa G., Godinho S. and Tavares A.

TCTP is required for mitotic spindle assembly.

Poster at XVth National Congress of Biochemistry, Aveiro University, Aveiro, Portugal

Pereira Leal J.B.

Coordinator of the "Bioinformatics and systems biology" symposium.

Annual meeting of the Portuguese Biochemical Society, Aveiro University, Aveiro, Portugal.

Pereira Leal J.B.

Duplication dynamics of Rab/YPT GTPases in Fungi.

Poster at Annual Meeting of the American Society for Cell Biology, San Diego, USA.

Pita Costa J. and Salles Caldeira R.
A Gripe vai à Escola.
Escola Secundária Anselmo de Andrade, Almada, Portugal.

Pita Costa J. and Salles Caldeira R.
A Gripe vai à Escola.
Obra Social Sagrado Coração, Guimarães, Portugal.

Salgueiro A.M., Filipe M. and Belo J. A.
Expression of N-acetylgalactosamine 4-sulfate 6-O-sulfotransferase during early mouse embryonic development.
Poster. XVth National Congress of Biochemistry, Aveiro University, Aveiro, Portugal.

Saúde L.
The role of terra during left-right establishment.
EMBO International Workshop on Developmental Mechanisms and Disease Models, Indian Institute of Technology, Kanpur, India

Sousa S. and Saúde L.
Does Plutão play a role in the regulation of the cyclic genes?
XVth National Congress of Biochemistry, Aveiro University, Aveiro, Portugal.

Tavares A.
Cell division and tumor suppressor genes: life without cell abscission.
Instituto de Medicina Molecular, Lisbon, Portugal.

Teotónio H.
C. elegans as a model system for experimental evolution of life-histories.
ESF Workshop on Metapopulation dynamics and life-history evolution, Montpellier, France.

Vitorino M., Silva A.C., Filipe M., Steinbeisser H. and Belo J. A.
Expression pattern of Xenopus orthologs of novel genes expressed in the mouse AVE. Poster at XVth National Congress of Biochemistry, Aveiro University, Aveiro, Portugal.