

Università degli Studi del Piemonte Orientale “Amedeo Avogadro”



PhD Program in Molecular Medicine *Cycle XXV*

Report of participation at meetings, educational activities and publications

Tutor:
Prof. Umberto Dianzani

PhD Student:
Gabriella Ranaldo

Co-tutor:
Dr. Antonia Follenzi

I. Participations and communications at meetings

- 3rd IBEC SYMPOSIUM ON BIOENGINEERING AND NANOMEDICINE, Barcelona, 1-2 June 2010
- EUROPEAN SOCIETY OF GENE AND CELL THERAPY XVIIITH ANNUAL CONGRESS, Milano, 22-25 October 2010
- XVI CONVEGNO TELETHON, Riva del Garda, 7-9 Marzo 2011

“Therapeutic roles of healthy donor human LSEC, bone marrow or cord blood-derived cells in Haemophilia A”

Simone Merlin, Gabriella Ranaldo, Diego Zanolini, Maria Prat and Antonia Follenzi

- EUROPEAN SOCIETY OF GENE AND CELL THERAPY XIXTH ANNUAL CONGRESS, Brighton UK, 27-31 October 2011
- ABCD Meeting “Stem Cells, Development and Regenerative Medicine”, Turin, 4-6 May 2012

“A Novel iPSC-based Strategy to Correct the Bleeding Phenotype in Hemophilia

A

Gabriella Ranaldo, MSc, Yvonne Richaud-Patin, MSc, Chantal Grosso, BSc, Maria Talmon, MSc, Stefania Cannizzo, MSc, Angelo Lombardo, PhD, Angel Raya, MD PhD, Luigi Naldini, MD PhD, PiercarlaSchinco, MD and Antonia Follenzi, MD PhD.

- XV Annual Meeting of the American Society of Gene and Cell Therapy, Philadelphia, Pennsylvania, 15-19 May 2012

“A Novel iPSC-based Strategy to Correct the Bleeding Phenotype in Hemophilia A”

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- 2nd Interrogations at the Biointerface Advanced Summer School”, Barcellona, 25-29 giugno 2012

“A Novel iPSC-based Strategy to Correct the Bleeding Phenotype in Hemophilia A”

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II. Didactic work

2009/2010

- Seminars within the department

Controllo funzionale dei linfociti T da parte di adenosina trifosfato (ATP) extracellulare

Prof. F. Grassi

14/12/09

LSD1, Lysine Specific Demethylase 1: insight into a new epigenetic regulator involved in neuronal gene regulation

DR. Elena Battaglioli

20/01/10

Cellule mesenchimali stromali fetali ed adulte: potenziali applicazioni in patologie ischemiche

Prof. Giulio Alessandri

21/01/10

Dal difetto genetico all'infiammazione

Dott. Luigi Maiuri

28/01/10

R & D of magnetic-nanoparticles and carriers for drugs

Dott. Giovanni Baldi

09/02/10

A novel antiviral mechanism mediated by the chemokine receptor CCR6

Prof. Alfredo GARZINO-DEMO

11/02/10

Computational analysis of protein-protein interactions

Prof. Stefano Pieraccini

17/02/10

Basi genetiche del diabete di tipo 1 e della sclerosi multipla: l'esempio della popolazione sarda.

Prof. Francesco Cucca

03/03/10

Role of membrane lipids in neuronal synapses organization

Dott. Paola Camoletto

05/07/10

Tissue Transglutaminase, a polyhedric enzyme: friend or foe?

Dott. Dario Fortunati
06/07/10

Ruolo delle micro vescicole nella comunicazione tra cellule
Dott. Giovanni Camussi
06/09/10

Le cellule staminali tumorali: dalla biologia alla clinica
Dott. Ruggero De Maria
22/09/10

New aspects of Cathepsin E functions in host defense mechanisms
Prof. Kenji Yamamoto
22/09/10

Preventing Persisters: Targeting Epigenetic Changes in Cancer Chemotherapy
Dr. Steven R. Ellis
23/09/10

Low-dose Bafilomycin is cytoprotective against Lysosome dysfunction, Implication of an Autophagy-associated therapeutic target for Neurodegenerative disease
Dott. John Shacka
24/09/10

A self-antigen peptidome carried by the human lymph
Prof. Laura Santambrogio
24/09/10

- Journal Club within the department

2010/2011

- Seminars in the department

Biomimetalization and preparation of biomimetic nanoapatites
Dr. J.G. Morales
11/11/10

Le cellule NK: dalla biologia alla terapia di leucemie ad alto rischio
Prof. L. Moretta
29/11/10

TARGETING LACTATE-FUELED RESPIRATION IN CANCER: A NEW
THERAPEUTIC OPPORTUNITY?
Prof. Pierre Sonveaux

Fluorescent mesoporous nanoparticles as tracer of the endocytic and exocytic pathways

Dott.ssa ManeeratEkkapongpisit
01/03/2011

Linfomi cutanei primitivi
Prof. E. Berti
02/03/11

Ferritins: ancient proteins with novel unexpected features
Dr.ssa S. Levi
12/04/11

Metabolic syndrome: the gastroenterologist point of view
Prof.ssa E. Bugianesi
13/04/11

Liver fibrosis in children affected by NASH: how to investigate that
Prof. V. Nobili
29/04/11

Reverse vaccination in autoimmune diseases
Prof. G. Filaci
03/05/11

Innate immunity and the pathogenicity of inhaled microbial particles
Prof. H. Wolff
09/05/11

Farmacologia dell'aterosclerosi
Prof. A. Corsini
13/05/11

Ion torrent technology for massive parallel sequencing
Dott. A. Di Nicola
23/05/11

Iron management in the hepcidin Era
Dr. S.R. Ellis
25/05/11

Molecular pathogenesis and biomarkers of Parkinson's disease
Prof. M. Fasano
17/06/11

Importance of pathobiology in rheumatoid arthritis
Prof. Pitzalis

24/06/11

Genetics and clinical phenotypes of Frontotemporal lobar degeneration

Dr. J. Rohrer

24/06/11

Role of PET imaging in early drug development

Dr.ssa R. Sharma

29/06/11

Management of high risk chronic lymphocytic leukemia

Prof. T. Zenz

30/06/11

Hypoxia, angiogenesis and liverfibrogenesis

Prof. M. Parola

01/07/11

- Frontal lessons within the department

MODULE 1: Introduction to systemic degenerative diseases

PROF. EMANUELE ALBANO

- 1) Introduction to systemic degenerative diseases I: 4 march
- 2) Introduction to systemic degenerative diseases II: 11 march
- 3) Introduction to systemic degenerative diseases III: 18 march

MODULE 2: Introduction to neurodegenerative diseases

1) PROF. LUCIA CORRADO

Amyotrophiclateralasclerosis: 25march

2) PROF. CRISTOFORO COMI

Parkinson and Alzheimer diseases: 1 April

- Journal club within the department

2011/2012

- Seminars within the department

New trends in allergy and immunology

Prof. Joseph A. BELLANTI

10/10/2012

The resolution of inflammation: players and targets

Prof. Mauro Perretti

07/11/11

Alpha-MSH and the melanocortin system in inflammation

Prof. Mauro Perretti

19/12/11

Galectins-carbohydrate binding protein: sweet or sour?

Prof. Mauro Perretti

20/12/2011

Hepatocellular Carcinoma, novel advances from genomics to treatment

Dr. Rohini SHARMA

13/01/2012

Next-generation DNA sequencing and target arrays in the clinics

Dr Paolo Fortina

25/01/12

Signalling pathways controlling integrin trafficking during invasion

Dr.ssa Elena Rainero

08/03/12

Molecular classification of multiple myeloma

Prof. Antonino Neri

22/03/2012

Role of Diacylglycerol kinases in the control of T cell activation and differentiation programs

Prof.ssa Isabel MERIDA

23/03/2012

Developing strategies for tissues specific targeting using peptides and antibodies isolated by in vivo phage display selection

Prof. Costantino PIZALIS

28/03/2012

A translational approach to the study of endometriosis

Dott.ssa Paola PANINA-BORDIGNON

10/05/2012

Microparticles as novel effectors in Inflammation

Prof. Mauro Perretti

15/05/2012

Resolvins and Omega-3 in Inflammation

Prof. Mauro Perretti

16/05/2012

Association of Merkel cell polyomavirus with human tumors

Prof. Mauro Tognon

14/06/2012

High-throughput Biochemical Target Investigation Unveils a Novel Function of miR-21 as a Negative Modulator of Signal Transduction in T-lymphocytes

Prof. Pino Mancino

15/06/12

SEDDA: Scale for Early Detection of Drug Abuse

Dott. Daniel LLORET

18/06/2012

Recent Advances in Hematopoietic Stem Cell Gene Therapy: from microRNA Regulation to Targeted Gene Transfer

Prof. Luigi Naldini

21/06/12

Next generation sequencing in T-ALL

Dr. Kim De Keersmaecker

10/07/12

UHRF1 protein promotes epigenetic cross-talks and is involved in cancer progression

Dott. Ian Marc BONAPACE

12/07/2012

Molecular control of human fetal globin expression: towards a potential cure for β thalassemia and sickle cell anemia

Dr. Sjaak Philipsen

13/07/12

BRAIN, BRAIN QUITE CONTRARY HOW DO YOU NEURONES DIE?
PROGRAMMED CELL DEATH

Prof. Philip Beart

19/07/12

OXIDATIVE STRESS AND RECRUITMENT OF AUTOPHAGY TO BRAIN CELL DEATH

Prof. Philip Beart

20/07/12

- Frontal lessons with Prof. Ellis within the department

Genetics and Molecular Medicine

- 1) May 21, 2011: Background reading, protein structure and function; Lecture topic: Hemoglobin/hemoglobinopathies; Team Based Learning
- 2) Tuesday, May 22, 2011: Background reading, enzymology; Lecture topic: applications of enzymology to clinical practice; Team Based Learning
- 3) Wednesday, May 23, 2011: Background reading, heme metabolism; Lecture topics: sideroblastic anemia, porphyria, bilirubin; Team Based Learning exercise
- 4) Thursday May 24, 2011: Background reading, iron metabolism; Lecture topics: hemochromatosis, iron deficiency anemia, anemia of chronic disease); Team Based Learning exercise
- 5) Friday, May 25, 2011: Background reading, drug development (review on Bcr-Abl, gleevec and second and third generation tyrosine kinase inhibitors); Lecture topic: chronic myelogenous leukemia, cause and treatment; Team Based Learning exercise
- 6) Monday, May 28, 2011: Background reading, hemostasis/coagulation; Lecture topic: thrombocytopenia, von Willebrand disease, hemophilia; Team Based Learning exercise
- 7) Tuesday, May 29, 2011: Background reading, hemostasis/anticoagulation; Lecture topic: thrombosis; Team Based Learning exercise
- 8) Wednesday, May 30, 2011: Background reading, nitrogen metabolism/nutrition; Lecture topic: Kwashiorkor, nitrogen balance; Team Based Learning exercise
- 9) Thursday, May 31: Background reading, carbohydrate metabolism; Lecture topic: diabetes
- 10) Friday, June 1, 2011: Diabetes/Review, Team Based Learning exercise

- BD FACSCalibur course

- 1) February 1, 2012: Principi base di Citofluorimetria, Principi di funzionamento del citofluorimetro, Procedure di manutenzione strumentale, Taratura manuale del citofluorimetro con swCellQuestPro, Principi di base del software FACSCComp.

2) February 2,2012: Acquisizione e analisi dei campioni con il software CellquestPro; Esercitazioni pratiche ed approfondimenti su software Cellquest Pro.

3) February 27,2012: Esercitazione pratica: acquisizione e messa a punto di protocolli

•Workshop Hemophilia: Cellular Reprogramming and Hemophilia as a Model of Disease

1)November 15th, 2012

Pier Carla Schinco "Comprehensive Haemophilia Care: State of the art".

JordiBarquintero "Gene therapy for hemophilia: success at last"

Angel Raya "Modeling human disease through induced pluripotent stem (iPS) cell technology"

2)November 16th,2012

LluísMartorellCedr s "Use of patient-specific iPSC as a model for functional studies of mutations responsible for Hemophilia"

Kupperschmitt-Dubart "Pluripotent human stem cells: a renewable source of hepatocytes and modelization of metabolic liver diseases".

Antonia Follenzi "Cell and gene therapy for Hemophilia A, iPS to endothelial cells as an example"

Angel Raya "CNS and iPS"

III. Educational activity

12 April 2010 – 30 June 2010: Stage in the laboratory of Prof. Angel Raya to learn bases of somatic cells reprogramming in pluripotent cells (induced pluripotent stem cell, iPS) , Institute for Bioengineering of Catalonia, Barcelona Science Park (BaldiriReixac 15-21 08028 Barcelona, Spain).

IV. Publications

- "Isolation and characterization of a spontaneously immortalized multipotent mesenchymal cell line derived from mouse subcutaneous adipose tissue"

Andrea Zamperone^{a*}, Stefano Pietronave^{a*}, Simone Merlin^a, Donato Colangelo^a, **Gabriella Ranaldo**^a, Enzo Medico^{b,c}, Federica Di Scipio^d, Giovanni Nicolao Berta^d, Antonia Follenzi^{a,e}, Maria Prat^{a,e}

^aDipartimento di Scienze della Salute, Università del Piemonte Orientale,

^bInstitute for Cancer Research @ Candiolo,

^cDipartimento di Oncologia, Università di Torino,

^dDipartimento di Scienze Cliniche e Biologiche, Università di Torino,

^eCentro di Biotecnologie per la Ricerca Medica Applicata (BRMA).

*These two authors contributed equally to the work

Submitted to Stem Cells and Development

- "Transplantation of primary Kupffer cells but not bone marrow-derived macrophages replaces resident hepatic macrophages in the mouse liver"

Simone Merlin ^{1*}, Antonia Follenzi^{1,2*}, Kuldeep K. Bhargava³, **Gabriella Ranaldo**¹, Christopher J. Palestro³, Maria Prat¹, Laura Santambrogio² and Sanjeev Gupta^{2,4}

¹Department of Health Sciences, University of Piemonte Orientale "A. Avogadro", Novara, Italy, ²Department of Pathology, Albert Einstein College of Medicine, Bronx, New York, ³Division of Nuclear Medicine and Molecular Imaging, North Shore - Long Island Jewish Health System, New Hyde Park, New York, ⁴Department of Medicine, Cancer Research Center, Diabetes Center, Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine Research, and Institute for Clinical and Translational Research, Albert Einstein College of Medicine, Bronx, New York

Submitted to Hepatology