



# Fondazione Italiana Fegato

ONLUS

Yearly Report FIF 2019

## YEARLY REPORT 2019

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## 1. FOUNDATION MEMBERS AND SUPPORTERS

### Members Promotors :

The Autonomous Region of Friuli Venezia Giulia  
The Integrated University Healthcare Agency of Trieste  
The Healthcare Company n. 5 "Western Friuli" of Pordenone  
The University of Trieste  
Clinica Medica Sur (Mexico City)

### Supporting Members:

The Consortium for the Scientific and Technological Research Area of Trieste  
The IRCSS Pascale of Naples  
The Integrated University Hospital of Verona  
Fondazione Genetica per la Vita (Genetics Foundation for Life)  
Bilimetrix srl  
Biovalley Investments

### Adherent members, as well as numerous individuals:

The Aviano Oncological Reference Center  
The University of Udine

**CRTrieste FOUNDATION** (€ 30,000 contribution for research and educational activities)

**Credit Agricole** (contribution of € 5,000)

## 2. MANAGEMENT BODIES

The Foundation bodies are:

The Board of Address  
The Management Board  
The College of Auditors  
The Scientific Committee  
The President of the Foundation



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In accordance with the statutory purposes, the Steering Committee determines the objectives and programs of FIF and verifies the overall results of the management of the Foundation.

A representative of each promoting member participates in the Steering Committee, with the exception of the FVG Region, which by statute has the right to appoint two ones.

The Management Board provides the administration and management of the Foundation within the plans, projects and budget lines approved by the Steering Committee.

The Board of Auditors deals with the verification of financial management, accounting records, and cash flows and draws up special reports to accompany the budget and final balance.

The Scientific Committee, chaired by prof. Tiribelli, organizes and controls the development of the scientific and cultural activity of the Foundation and meets once a year.

Composition of Bodies on the Transparent Administration section <http://www.fegato.it>

### 3. PERSONNEL

#### **President-Legal Representative**

Adriano Del Prete

#### **Scientific director**

Prof. Claudio Tiribelli

#### **Permanent Scientific and Clinical Staff**

Cristina Bellarosa, Basic Deputy Director and Senior scientist

Silvia Gazzin, Senior scientist

Natalia Rosso, Senior scientist

Saveria Lory Crocè, Associate Professor and  
Director of Clinic Liver Diseases

#### **Permanent Technical Administrative Staff**

Sabrina Corsucci, Head of Administration, Transparency and Grants

Sandra Leal, laboratory technician

#### **Post Doc**

Pablo Giraudi, Devis Pascut, Caecilia Hapsari Sukowati (research fellow at the University of Udine), Beatrice Anfuso (January / May)



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## General Assistant

Lucia Napoli

## PhD students in Molecular Biomedicine, University of Trieste

Rusdina Bte Ladju, LPDP, undergraduate (31st cycle)

Yogi Muhammad Pratama, LPDP, II year (32nd cycle)

Annalisa Bianco, 2nd year (33rd cycle)

Sri Jayanti, 2nd year (33rd cycle)

Kay Loraine Cabral, 1st year (34th cycle)

Noel Salvoza, 1st year (34th cycle)

## Graduating students to the third year

1. Dr. Michele Campigotto
2. Dr. Anna Colombo
3. Dr. Alessia Visintin

## Graduates in the second year

1. Alessandro Aversano
2. Dr. Martina Budel
3. Luca Navarria

## Graduates in the first year

1. Cavalli Carolina Aliai Micol
2. Giuffrè Mauro
3. Piccin Anna
4. Sigon Riccardo

## Thesis trainees -

Alessia Di Nella

Nicole Parmesan

Clodia Gerotto



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Serena Pinci

Chiara Andolfi

Luca Grisetti

## Scholarship holders - Visiting fellows

Vittorio Abruzzese, University of Basilicata

Huy Quang DO, Ho Chi Minh University, Vietnam

Johanna Matilainen, University of Eastern Finland

## Visiting Professor

Omar Abu Abed, "Zamala Program" Taawon, University of Hebron, Palestine

## 4. INSTITUTIONAL ACTIVITY

### November 22, 2019 - Governor Fedriga visits FIF

On 22 November, the Governor of the FVG Region Massimiliano Fedriga visited the FIF laboratories, calling it "An important research reality, capable of designing analytical instruments produced by local companies, and connected internationally to other scientific institutes in innovative experiments, such as which concerns vaccination for recurrence of liver cancer." The Governor emphasized the quality of the work done by FIF and remarked on the results achieved by the Foundation in the study of various liver diseases (steatohepatitis and liver tumors in particular). In addition, he referred to the research about neurotoxic effects of severe hyperbilirubinemia in the newborn, which led to the creation of a specific tool for a blood test by Bilimetrix, a company born from FIF.

Visiting the Foundation's laboratories, the governor favorably recorded the progress of the ongoing research carried out by the many foreign and Italian fellows who work at FIF.

"Activities such as these of the Italian Liver Foundation - concluded Fedriga - testify to the scientific vocation of Trieste and Friuli Venezia Giulia. The task of the institutions, and the objective of our Administration, is to convert this factor into an element of sustainable growth of the Regional economy".

### November 22, 2019 - Antonio Poggiana, DG of ASUITS, visiting FIF

On the morning of 22 November ASUITS General Manager, Antonio Poggiana visited FIF together with Medical Director Lucia Pelusi, member of the FIF Steering Boards. During the meeting, the collaboration between FIF and ASUITS was discussed with the Liver Pathology



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Clinic (represented by Dr. Lory Croce), Bariatric Surgery (represented by Dr. Silvia Palmisano) and Pathological Anatomy (represented by Dr. Deborah Bonazza). This collaboration is a positive example of mutual interaction in which ASUITS offers clinical skills and biological material for the research activity carried out in the FIF laboratories. The general consensus on the willingness to continue the collaboration is supported by the evidence of the excellent results obtained jointly; in fact, both the number of research funding and the number of publications in international scientific journals has increased year by year.

## **16-17 October 2019 - Visit to the Indonesian delegation to FIF**

The visit of the Indonesian delegation from the Hasanuddin University UNHAS of Makassar and composed of:

- Prof Nasrum Massi (Vice Rector of Research, Innovation, and International Collaboration)
- Dr Ansariady (Vice Dean of Academic Affair, Faculty of Public Health)
- Prof Subehan Ambo Lallo (Vice Dean of Academic Affair, Faculty of Pharmacy)
- dr Irfan Idris (Vice Dean of Academic Affair, Faculty of Medicine)
- Prof Edy Machmud Tugiman (Vice Dean of Academic Affair, Faculty of Dentistry)
- Dr. Ida Leida Maria (Director of Department of Academic Affair, Hasanuddin University)
- Prof Mahlia Muis Mahlia Muis (Vice Dean of Academic Affair, Faculty of Economy)
- Prof Rohani Ambo Rappe Lahiya (Vice Dean of Academic Affair, Faculty of Fishery and Marine Science)

It took place between October 16 and October 17 on the occasion of the discussion of the PhD thesis of the first PhD student from Hasanuddin University at the Italian Liver Foundation. The main objective of the visit was to promote furtherly the joint research and training activities and programs existing between Hassanudin University UNHAS, the University of Trieste and the Italian Liver Foundation.

## **October 14-15, 2019 - Philippine government delegation visit**

The visit of the delegation made up of Minister Fortunato T. De La Peña, Secretary of the Department of Science and Technology, DOST - Dr. Jaime C. Montoya, Executive Director of the Philippine Council for Health Research and Development, PCHRD - and Mersole Mellejor, Philippine Consul in Milan - **took place** between October 14 and 15 **and included** meetings with representatives of FIF together with Regional authorities, the President of ESO2020 (European Science Forum), representatives of the Universities of Trieste and Udine, and other bodies involved in biomedical, biotechnological and production area.

The main objective of the visit was to promote furtherly the joint research and training activities and programs existing between the Department of Science and Technology and FIF, looking for the creation of a Philippine hepatological network (FLN - Filipino Liver Network ), as well as increasing knowledge and improving the existing collaboration with



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the realities of Trieste and Friuli Venezia Giulia. An agreement has also been signed that every year two Filipino students will carry out the three-year doctoral program in Molecular Medicine. The first two students will arrive on 1st November 2019.

The visit was very productive and further strengthened the role that FIF plays in translational training and research in the liver with the Philippine government. Claudio Tiribelli will meet FLN and DOST and PCHRD representatives on January 22, 2020, in Manila.

## **April 8, 2019 - Tiziana Benussi, President of the CRT Foundation, visiting FIF**

The President of the CRT Foundation Tiziana Benussi visited the FIF laboratories on 8 April 2019. During the meeting, the projects carried out by the FIF in the field of translational research on liver pathologies were presented, which were also supported by the CRT Foundation. The President expressed appreciation for what was accomplished and interest in future projects.

## **March 26, 2019 - CAIC Ten Years Anniversary**

On March 22, was celebrated the anniversary of **the first 10 years** of the **Argentine-Italian Center for Cryobiology (CAIC)** at the headquarters of the Universidad Nacional de Rosario (UNR), Argentina. CAIC is the first and only center in South America for cryobiology and it is in charge of identifying the optimal solutions for the organ preservation (liver in particular) in view of the transplant. This is associated with a growing activity of cryopreservation of tissues and organisms used in veterinary and agriculture. The CAIC was made possible by a substantial initial investment by FIF through the FVG Region and thanks to the support of the research that FIF assures CAIC every year. The Director of the CAIC Edgardo Guibett introduced Dr. Joaquin Rodriguez, who together with Claudio Tiribelli defined the structure, purposes, and operations of the CAIC in 2009. Joaquin has been retiring for 4 months but has secured his scientific contribution as a Senior Advisor. The ceremony was attended by the Rector of the UNR, the Scientific Attaché of the Italian Embassy in Buenos Aires, the Consul General of Italy in Rosario, the representative of the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Dr. Fay - who collaborated in the launch of the CAIC and many other scientific, entrepreneurial and political personalities from the Province of Santa Fe. Claudio Tiribelli recalled the stages from the initial idea to the subsequent realization of the CAIC and how FIF supported the training in Trieste of researchers currently working at CAIC (Celeste Robert in particular). CAIC is the demonstration of the success of an ambitious idea but which led to the creation of the only cold center under continuous FIF supervision. Now the activity is moving towards the Fundacion Favaloro in Buenos Aires which will test in vivo the liver preservation solution developed by CAIC. This activity will also be carried out in close collaboration and with the support of FIF.



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## 5. INTERNATIONAL COOPERATION

In 2019, the Foundation successfully continued the international cooperation activities already started with the historic partner countries and established new ones

- ARGENTINE
- AUSTRIA
- BRAZIL
- CZECH REPUBLIC
- PHILIPPINES
- FRANCE
- INDIA
- INDONESIA
- MEXICO
- SLOVENIA
- USA
- VIETNAM

Underlining once again the international vocation in the educational and scientific field, in 2019 thanks to pre-existing international agreements, several researchers spent a period at FIF to carry out research. Here are their names:

- i. Omar Abu Abed , "Zamala Program" Taawon, University of Hebron, Palestine
- ii. Huy Quang Do , Ho Chi Minh University, Vietnam
- iii. Sri Jayanti, LPDP Indonesia
- iv. Rusdina Bte Ladju, LPDP Indonesia
- v. Yogi Muhammad Pratama, LPDP Indonesia
- vi. Kay Loraine Cabral, DOST-PCHRD Philippines
- vii. Noel Salvoza, DOST-PCHRD Philippines

### **New bilateral agreement with the Philippines**

The signature of the scientific cooperation protocol between the Department of Science and Technology (DOST) through the Philippine Council for Health Research and Development (PCHRD) and FIF took place on 22 February 2019. At the signature were present (from left to right in the first image) Dr. Jaime C. Montoya (Executive Director,





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PCHRD), Mrs. Jessica Marie Suerte (PCHRD), Dr. Ernesto Domingo (National Scientist PH), the Lucky Secretary T. de La Peña (DOST Secretary), Mrs. Carina Rebulanan (PCHRD), Claudio Tiribelli ( FIF ) and dr. Peter Andrew Reyes (researcher 2018). The agreement provides that the DOST-PCHRD will fund doctoral and clinical training grants for Filipino researchers and hepatologists at the FIF laboratories or the clinical structures connected to them. The FIF is excited about the opportunity that makes possible the creation of a network of translational hepatology in the Philippines coordinated jointly by DOST-PCHRD and FIF. The secretary of La Peña and Dr. Montoya have scheduled an official visit to FIF.

## 6. COLLABORATIONS WITH CLINICAL CENTERS

The Italian Liver Foundation carries out its translational research mission in the field of liver diseases through close clinical and scientific collaboration with numerous hospitals and clinical centers in Italy and worldwide. Below is the list of centers.

### NATIONAL CLINICAL CENTERS

Friuli Venezia Giulia

**Integrated University Hospital of Trieste**

SC (UCO) Clinic Liver pathologies

UCO General Surgery

SC (UCO) Anatomy and Pathological Histology

SC Neurology

SC Transfusion Medicine

**IRCCS Maternal and Child Burlo Garofalo**

Neonatology

Advanced microbiology

**IRCSS CRO Aviano (PN)**

SOC Experimental and Clinical Pharmacology

**Integrated University Hospital of Udine**

DS Liver Transplants

Medical clinic

Veneto

**Integrated University Hospital of Verona**

USE Liver Transplant Center

**Polyclinic of the Hospital of Padua**

Department of Medicine

Trentino Alto Adige



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## **Bolzano hospital**

Gastroenterology, Pathophysiology and Digestive Endoscopy

## Lombardy

### **University of Milano Bicocca**

Department of Medicine and Surgery

### **IRCSS San Raffaele Hospital, Milan**

Immunobiology of HIV Unit

## Piedmont

**Italian Auxological Institute, Piancavallo (VB) Auxology Unit**

## Emilia Romagna

**University Hospital of Modena SC Gastroenterology**

## Tuscany

**Pisan University Hospital OU Hepatology**

## Lazio

### **The RCCS Gemelli University Polyclinic Rome**

Internal Medicine and Gastroenterology Columbus

### **IRCCS Bambin Gesù Children's Hospital**

Molecular Genetics Unit

## Campania

### **National Institute for Cancer Treatment "Fond. Pascale" Naples**

UOC Molecular Biology and Viral Oncology

## Sicily

### **University of Palermo**

Section of Gastroenterology and Hepatology

### **University Hospital Policlinico Gaetano Martino, Messina**

UOS Clinical and Biomolecular Hepatology

## FOREIGN CLINICAL CENTERS :

- Fundacion Favaloro Buenos Aires (Argentina)
- Sociedade Brasileira de Hepatologia, São Paulo (Brazil)
- Medica Sur, Mexico City (Mexico)
- Eijkman Institute for Molecular Biology and Medicine, Jakarta (Indonesia)



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- University Medical Center of Ho Chi Minh City (Vietnam)
- Children's Mercy Hospital, Kansas City (USA)

## 7. TEACHING ACTIVITY

### 7.1 Frontal lessons

#### **Dr. Devis Pascut**

Position: Post-doc researcher FIF

Visiting professor Hasanuddin University Makassar - Indonesia 4-25 May 2019

Lectures on translational medicine for hepatocellular carcinoma, molecular mechanisms, and bio-vessels

#### **Prof. Saveria Lory Crocè**

Position: Associate Professor

Degree course: [ME03] MEDICINE AND SURGERY

Course title: 936ME-8 - GASTROENTEROLOGY Coverage data: Ownership / Weight: 2, SuaCds hours: 20 Register: First Semester, hours: 20

#### **Frontal lessons of specialization schools:**

#### SPECIALIZATION SCHOOL IN DISEASES OF THE DIGESTIVE SYSTEM

- SSM16-55 - DISEASES OF THE DIGESTIVE APPARATUS Coverage data: Matter of ownership / Weight: 5, Hours SuaCds: 15 Register:
- SSM19-74 - GASTROENTEROLOGICAL CLINICAL RESEARCH Coverage data: Subject matter / Weight: 8, SuaCds hours: 240 Register: SSM19 - 11 GASTROENTEROLOGY AND HEPATOLOGY CFU: 4.0
- SSM19-61 - GASTROENTEROLOGY AND HEPATOLOGY Coverage data: Ownership / Weight: 4.25, SuaCds hours: 127.5 Register:
- SSM19-60 - GASTROENTEROLOGY AND HEPATOLOGY Coverage data: Matter of ownership / Weight: 25, Hours SuaCds: 1.5 Register:
- SSM19-36 - GASTROENTEROLOGY AND HEPATOLOGY Coverage data: Subject matter / Weight: 3.5, SuaCds hours: 105 Register:
- SSM19-35 - GASTROENTEROLOGY AND HEPATOLOGY Coverage data: Ownership / Weight: 5, SuaCds hours: 3 Register
- SSM19-48 - NUTRITION IN GASTROENTEROLOGY Coverage data: Ownership / Weight: 25, SuaCds hours: 1,5 Register: Single Annuity, hours: 4



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## 7.2 Degree thesis

### **Nicole Parmesan**

TITLE: THE ROLE OF CD13 CANCER STEM CELLS IN APOPTOSIS AND HEPATITIS C VIRUS INFECTION IN THE VITRO MODEL OF LIVER CANCER

Degree course: in Biological Sciences and Technologies

Discussion date: 18.03.2019

Tutor: Dr. Marco Scocchi

Supervisors: Dr. Caecilia Sukowati, Prof. Claudio Tiribelli

### **Alessia Di Nella**

TITLE: EFFECTS OF CD95 / FAS GENE SILENCING ON HUMAN LIVER CELLS AND ITS POSSIBLE ROLE IN HEPATOCARCINOGENESIS

Course of Science Degree in Medical and Pharmaceutical Biotechnology

Discussion date: 28.03.2019

Tutor: Prof. Gabriele Grassi

Supervisors: Dr. Caecilia Sukowati, Prof. Claudio Tiribelli

### **Clodia Gerotto**

TITLE: Evaluation of the potential protective effect of bilirubin in Parkinson's disease.

Master of Science in Biotechnology for Health

Discussion date: 25.07.2019

Tutor: Prof. Luca Nicola Ferraro

Supervisor: Dr. Silvia Gazzin

## 7.3 Doctoral thesis

### **Rusdina Bte Ladju**

TITLE: THE IMPORTANCE OF CELL DEATH RECEPTOR PATHWAY IN HEPATOCELLULAR CARCINOMA AND ITS POTENTIAL IN THE DEVELOPMENT OF OLIGONUCLEOTIDE NANOMEDICINE

Doctoral School: Molecular Biomedicine

Discussion date: 17.10.2019

Supervisor: Prof. Claudio Tiribelli

Tutor: Dr. Caecilia Sukowati



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## 8. SEMINARS AND CONFERENCES HELD BY THE FOUNDATION

### 8.1 Yellow Seminars

*Membrane transporters for bilirubin and its conjugates. Outcome of a systematic review of the literature*

01/18/2019

**Prof. Sabina Passamonti, MD, PhD**

Life Sciences Department, University of Trieste

*The role of extracellular vesicles in the development and progression of NAFLD*

24/01/2019

**Johanna Matilainen**

University of Eastern Finland

Institute of Biomedicine, Kuopio, Finland

*Autoimmune Liver Diseases*

02/08/2019

**Prof. Pietro Invernizzi, MD, PhD**

Director of the Specialization School in Gastroenterology, Milano Bicocca University

UOC Director of Gastroenterology; San Gerardo Hospital, Monza

### 8.2 Don Ostrow Trieste Yellow Retreat (DOTYR) 2019

Trieste, the world capital of bilirubin studies, is once more yellow than usual (bilirubin is the substance that causes jaundice!). The **DOTYR (Donald Ostrow Trieste Yellow Retreat) Trieste, 4-5 September 2019** - is a biennial meeting organized by the Italian Liver Foundation - Onlus, which brings together all the most important scientists involved with clinical and research activity on the effects of bilirubin. Since 2013 the former TYR has been renamed DOTYR, in memory of Jay Donald Ostrow, one of the giants who contributed significantly to the understanding of bilirubin, thanks to its approximately 100 publications from 1961 to 2011. In the 2019 edition the event DOTYR with the contribution of Bilimetrix and the collaboration of Elettra Sincrotrone, has seen particularly large participation. We had the pleasure of hosting study groups representing more than 16 countries distributed all over the world, as well as by important Italian institutions. Alongside clinical presentations made by pediatricians and researchers from the United States, Indonesia, the Philippines and obviously there were presentations made by the FIF and the ICGEB of Trieste, as well as by researchers from all over Europe (Austria, Czech Republic, Denmark, countries the Netherlands). The DOTYR has always represented for scholars of the topic a valuable opportunity for scientific and human exchange mutually enriching for all participants.



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## 8.3 Workshop "Immunotherapy in liver cancer: Reality or Hope?"

The workshop "*Immunotherapy in liver cancer: Reality or Hope?*" was held on Wednesday 20 November 2019 in Area Science Park at Building T of the Campus of Basovizza. Dedicated to insights on immunotherapy in the treatment of hepatocellular carcinoma.

Hepatocellular carcinoma represents the seventh most frequent cancer worldwide with over 800,000 cases diagnosed each year. Late diagnosis limits therapeutic strategies, thus reducing the patient's life expectancy. With the introduction of immunotherapy, which helps the patient's immune system to control the growth of cancer cells, new perspectives have opened up in the treatment of the disease.

The current scientific research in the field of liver oncology is oriented to the study of the molecular mechanisms involved in the immune system-tumor cell interaction, in order to strengthen the effect of the therapy itself and consequently increase life expectancy for patients.

In order to investigate some of these aspects, the Italian Liver Foundation organized the technical workshop under the patronage of proESOF, which saw large audience participation by students, doctors and researchers.

## 8.4 Annual meeting of the Scientific Committee

The thirteenth meeting of the FIF Scientific Committee (CS) was held on Thursday, November 21, 2019 in the Conference Room T thanks to the precious hospitality and collaboration of Elettra Sincrotrone.

The work began with greetings from the FIF president, Adriano Del Prete, who pointed out that this is the last meeting of the mandate since all the FIF bodies are due to expire and will be renewed in 2020. The President of the Scientific Committee, prof. Claudio Tiribelli then started the work by inviting the FIF Senior Scientists and Senior Researchers to present the results obtained in the last year with particular attention to future prospects. The presentations spanned all the research lines present in FIF ranging from the molecular mechanisms of bilirubin neurotoxicity in the newborn - to the protective aspects of mild hyperbilirubinemia in Parkinson's and metabolic syndrome, in search of non-invasive biomarkers for the progression of steatohepatitis in fibrosis - to the possibility of using miRNA to monitor the effect of therapy in HCC and to make an early diagnosis - to the different profiles of cancer stem cells in hepatocellular carcinoma depending on the etiology and geographical origin.

The magisterial lecture was given by Luigi Buonaguro of the National Cancer Institute of Naples who presented and presented the projects in which he is actively involved aimed at developing a therapeutic vaccine for hepatocellular carcinoma.

In the end, Prof. Tiribelli reported to the CS on the state of FIF funding and scientific production. In 2019, FIF has so far obtained the publication of 37 full papers and reviews with an impact factor of 130. Some works are still under revision and therefore this number could increase before the end of the year.

In closing the work, Tiribelli thanked everyone for the work done and reiterated the three main missions of FIF: translational research, clinical and education activities. These will be



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the points on which the new scientific committee and all FIF collaborators will be invited to work. As usual, the date of the next annual meeting of the CS has been announced and it will be **November 19, 2020**

## 9. RESEARCH ACTIVITY

### 9.1 Research grants and grants

*AUTONOMOUS REGION FVG - INTERNATIONAL PROJECTS E HUMANITARIAN INTERVENTIONS.*

Regional Council Resolution no. 448 of March 22, 2019.

1) "In vivo validation and development of new techniques for cryopreservation of liver cells and organ in full"

Partners: CAIC of Rosario and Fundacion Favaloro of Buenos Aires. Contribution obtained for 2019: € 21,161.29

2) "Training in Molecular Hepatology and development of the liver research network in Indonesia"

Partners: Eijkman Institute for molecular biology (EJ); Hasannudin University (UNHAS). Contribution obtained for 2019: € 20,564.52

3) "Translational research on Hepatocellular Carcinoma in Vietnam"

Partners: University Medical Center - Ho Chi Minh City. Contribution obtained for 2019: € 10,887.10

*Kathleen Foreman Casali Charitable Foundation*

10/3/19 - 31/12/19

"Identification and validation of non-invasive biomarkers for the diagnosis of non-alcoholic steatohepatitis (NASH)"

PI: Natalia Rosso, Senior Scientist

Contribution obtained: € 10,000

Total project cost: € 20,000

*MAT CONSULTING*

Title: "Splicing Factors: Mis-folding, aggregation and low tissue levels during aging, role in the onset of degenerative diseases"

PI: prof. Francisco Baralle

Contribution obtained for 2019: € 7,216



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*POR FESR 2014-2020 (Activity 1.3.b. Call approved with DGR 849/2016)*

Title: "Surface-enhanced Raman microRNA for cancer diagnosis and management"

Partners: Dino Paladin Research Center, INSIEL Mercato, Alphagenics, FIF, UNITS (engineering and architecture dept.)

Contribution obtained for 2019: € 31,895

*Bank of Italy*

06/01/19 - 12/31/19

Diabetes and metabolic syndrome: study on the preventive role of mild hyperbilirubinemia

PI: Cristina Bellarosa, Senior Scientist

Contribution obtained: € 10,000

Total project cost: € 35,000

Co-financing: 70% (hours / structured man and PhD, Materials, enclosure)

*Gilead*

2019-2020

Publication Grant (Bagnocavallo project data - Dr. Foschi)

Contribution obtained: € 16.546

*LPDP Indonesia*

Support for the purchase of consumables for the doctoral program of the three fellows of Hasanuddin University (Rusdina Bte Ladju, Md. Yogi Pratama , Sri Jayanti )

Contribution spent for 2019: € 7,298

*BENEFICENTIA STIFTUNG*

Title: "Diabetes and metabolic syndrome: study on the preventive role of mild hyperbilirubinemia"

Contribution obtained for 2019: € 45,105 €

*Bracco Spa*

Research program

Evaluation of the potential toxicity of the compounds (Primovist, commercial formulation), (Ca-EOB-DTPA) and (Gd-EOB-DTPA) for hepatocytes;

1st phase: 21/1 / 19-22 / 3/19

1st phase: 25/3 / 19-14 / 5/19

PI: Silvia Gazzin

Revenue from sales € 38,100 + VAT





## 9.2 Research activity in progress

- Identification and validation of serum biomarkers for the diagnosis and prognosis of fatty liver disease
- Study of the molecular mechanisms involved in the progression from NAFLD to NASH
- Therapeutic approaches for NAFLD and NASH: study of natural compounds
- Stem cells and cancer stem cells in the progression of liver disease
- Inhibition of hyaluronic acid in liver cancer
- Identification and isolation of circulating cancer stem cells of hepatocellular carcinoma and their pattern post-curative treatment
- Study on the cell death receptor in HCC: development of targeted-therapies
- Aptamer development against HCC
- Analysis of miRNA profiles in HCC patients
- Adaptive mechanisms leading to multidrug resistance in HCC
- Telomerase regulation in HCC
- APE1 and associated miRNA in serum of HCC patients and healthy blood donors
- The epigenetic of bilirubin induced encephalopathy and brain development in the Gunn rat.
- In vivo pharmacological pre-clinical trial toward bilirubin induced neurotoxicity
- Bilirubin As Neuroprotective Brain Factor in Neurodegenerative Disorder (s)
- Molecular focused therapeutical approaches to Parkinson disease
- The most severe phenotype Gunn colony: stabilization of the character and understanding of the possible genetic origin.
- Molecular events associated with ER stress induction by unconjugated bilirubin in in vitro model: Calcium Signalling
- Mild Hyperbilirubinemia protective role against Type 2 Diabetes and Metabolic Syndrome

## 9.3 Awards, scholarships, other funding sources

In 2019, FIF has obtained many different awards, travel grants, scholarships to attend conferences, post-doc scholarships and various awards, which increase visibility and indirectly affect the FIF economically.



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## Personnel:

6 researchers financed by external sources:

- 1 research grant University of Udine (Medical Area Dept.)
- 3 PhD Hasannudin University, Makassar, Indonesia
- 2 PhD PCHRD Philippines

## Materials (LPDP Indonesia):

Bench fees used during the year for the FIF / UNITS / Hasanuddin University PhD program: € 7,298

## Travel Grants:

- Rusdina Bte Ladju. Registration bursary. EASL HCC Summit 2019, Lisbon, Portugal 14-16 February 2019.
- Mohammad Y Pratama. Registration bursary. EASL HCC Summit 2019, Lisbon, Portugal 14-16 February 2019.
- Mohammad Y Pratama. Registration bursary. EASL International Liver Congress 2019, Vienna, 10-14 April 2019
- Mohammad Y Pratama. Young Investigator bursary. Annual Meeting AISF 2019, Rome 20-21 February 2019
- Devis Pascut. Registration bursary. EASL International Liver Congress 2019, Vienna, 10-14 April 2019
- Devis Pascut. Young Investigator bursary. Annual Meeting AISF 2019, Rome 20-21 February 2019

## 10. PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONGRESSES

### 10.1 Poster presentations

1. Annalisa Bianco, Serena Pinci, Claudio Tiribelli and Cristina Bellarosa. Bilirubin biological effects on different *in vitro* systems DOTYR 2019, 4-5, September 2019, Trieste, Italy



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2. Serena Pinci, Annalisa Bianco, Claudio Tiribelli and Cristina Bellarosa. Effects of Bilirubin on Metabolic Syndrome in two *in vitro* models of MetS. DOTYR 2019, 4-5, September 2019, Trieste, Italy
3. Devis Pascut, Francesca Gilardi, Muhammad Yogi, Pratama Riccardo Patti, Lory Saveria Crocè, Claudio Tiribelli. Blood based Weighted gene co-expression network analysis (WGCNA) identifies miRNA prognostic biomarkers for HCC. EASL Internation at Liver Congress 2019, Vienna, 10-14 April 2019.
4. Devis Pascut, Francesca Gilardi, Muhammad Yogi, Pratama Riccardo Patti, Lory Saveria Crocè, Claudio Tiribelli. Blood based Weighted gene co-expression network analysis (WGCNA) identifies miRNA prognostic biomarkers for HCC. EAS L International Liver Congress 2019, Vienna, 10-14 April 2019.
5. Muhammad Yogi Pratama, Alessia Visintin, Matteo Rossano Buonocore, Lory Saveria Crocè, Claudio Tiribelli, Devis Pascut. Circulating miR-4492 as a Biomarker to Predict Therapy Response and Disease Free Survival in Hepatocellular. EAS L International Liver Congress 2019, Vienna, 10-14 April 2019.
6. Muhammad Yogi Pratama, Alessia Visintin, Matteo Rossano Buonocore, Lory Saveria Crocè, Claudio Tiribelli, Devis Pascut Circulating miR-3185 as a Predictive marker for Overall Survival in Patients with Hepatocellular Carcinoma. Annual Meeting AISF 2019, Rome 20-21 February 2019
7. Devis Pascut, Alois Bonifacio, Alessia Visintin, Alessia Di Silvestre, Elisa Mitri, Lory Saveria Crocè, Claudio Tiribelli. Surface enhanced Raman spectroscopy as a diagnostic tool for circulating miRNA detection in HCC: the SERMI4cancer project. Annual Meeting AISF 2019, Rome 20-21 February 2019
8. Devis Pascut, Muhammad Yogi Pratama, Francesca Gilardi, Riccardo Patti, Lory Saveria Crocè, Claudio Tiribelli. Weighted gene co-expression network analysis of circulating miRNAs as a tool to discover prognostic biomarkers for Hepatocellular Carcinoma. Annual Meeting AISF 2019, Rome 20-21 February 2019
9. Muhammad Yogi Pratama, Alessia Visintin, Matteo Rossano Buonocore, Lory Saveria Crocè, Claudio Tiribelli, Devis Pascut. Circulating miR-4507 as a novel prognostic biomarker in Hepatocellular Carcinoma. EASL HCC summit 2019, Lisbon 14-16 February 2019.
10. Devis Pascut, Francesca Gilardi, Muhammad Yogi Pratama, Riccardo Patti, Lory Saveria Crocè, Claudio Tiribelli. Changes in the circulating miRNA profiles after therapy identify miRNA predictive biomarkers for HCC recurrence. EASL HCC summit 2019, Lisbon 14-16 February 2019
11. Zarattini, Lorenzon, Bramante, Gazzin. Improving housing conditions ensures health and well-being of animal model: a case of study. FELASA, Prague, 2019



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12. Ladju RB, Tiribelli C, Sukowati CHC Fas and p53-upregulated modulator of apoptosis in hepatocellular carcinoma cellular death. EASL HCC Summit 2019, Lisbon, Portugal 14-16 February 2019.
13. Siracuno G, Magagnoli, Sukowati C, Tiribelli C, Pastori A, Tagliamonte M, Andolfi A, Lopalco L, Buonaguro L Proteomic profile of liver tissues for the search of new HCC biomarkers. . 2019 XVII NIBIT Meeting. Verona
14. Lulli M, Cavallini L, Gragnani L, Sukowati C, Mello T, Galli A, Ghini V, Rombouts K, Carloni V. DNA damage response CHK2 activates senescence cellular program and supports oxidative metabolism to drive hepatocellular carcinoma development. EASL International Liver Congress 2019, Vienna, 10-14 April 2019

## 10.2 Oral presentations

1. Sri Jayanti. Curcumin reverses cerebellar hypoplasia in hyperbilirubinemic Gunn rat by a pleiotropic effect on the molecular effectors of brain damage. DOTYR 2019, 4-5, September 2019, Trieste, Italy
2. Rossana Rauti, Mohammed Qaisiya, Claudio Tiribelli, Laura Ballerini, Cristina Bellarosa: Activation of the apoptotic calcium-dependent signaling in primary hippocampal neuronal cells by bilirubin DOTYR 2019, 4-5, September 2019, Trieste, Italy
3. Devis Pascut, SERMI4Cancer, Surface enhanced Raman microRNA for cancer diagnosis and management. Meeting, new frontiers in cancer analysis: development of innovative cancer diagnosis and management systems. Trieste 9<sup>th</sup> July 2019.
4. Devis Pascut, Technique to write a review and international collaboration. Department of clinical pathology, faculty of medicine, Universitas Hasanuddin. 24<sup>th</sup> May 2019

## 10.3 Publications abstracts

1. Muhammad Yogi Pratama, Alessia Visintin, Matteo Rossano Buonocore, Lory Saveria Crocè, Claudio Tiribelli, Devis Pascut. Circulating miR-4492 as a Biomarker to Predict Therapy Response and Disease Free Survival in Hepatocellular. EASL International Liver Congress 2019, Vienna, 10-14 April 2019. J.Hepatology 2019 Vol.70, 1S e375
2. Devis Pascut, Francesca Gilardi, Muhammad Yogi, Pratama Riccardo Patti, Lory Saveria Crocè, Claudio Tiribelli. Blood based Weighted gene co-expression network analysis (WGCNA) identifies miRNA prognostic biomarkers for HCC. EASL



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International Liver Congress 2019, Vienna, 10-14 April 2019. J.Hepatology 2019 Vol.70, 1S e373.

3. Devis Pascut, Alois Bonifacio, Alessia Visintin, Alessia Di Silvestre, Elisa Mitri, Lory Saveria Crocè, Claudio Tiribelli. Surface enhanced Raman spectroscopy as a diagnostic tool for circulating miRNA detection in HCC: the SERMI4cancer project. Digestive and Liver Disease 51 (2019) e18 - e42

4. Devis Pascut, Muhammad Yogi Pratama, Francesca Gilardi, Riccardo Patti, Lory Saveria Crocè, Claudio Tiribelli. Weighted gene co-expression network analysis of circulating miRNAs as a tool to discover prognostic biomarkers for Hepatocellular Carcinoma. Digestive and Liver Disease 51 (2019) e18 - e42.

5. Lulli M, Cavallini L, Gragnani L, Sukowati C, Mello T, Galli A, Ghini V, Rombouts K, Carloni V. DNA damage response CHK2 activates senescence cellular program and supports oxidative metabolism to drive hepatocellular carcinoma development. . J Hepatol. 70, Issue 1, S1, Page e355. EASL ILC 2019.

## 10.4 Speeches by Prof. Tiribelli

1. Lecture entitled: "*Translational Hepatology*" - Czech Liver Meeting Pilzen - Pilsen (CZ) May 16, 2019

2. Lecture entitled: "*Diagnostic in NJ*" - XXV Meeting SIN - Catania, September 26, 2019

3. Lecture entitled: "*Liver Health in the 21st Century*" - Glyco Liver Profile - October 2, 2019

4. Lecture "*Severe Neonatal Jaundice: is it still problem in the world?*" AIRLANGGA University - Surabaya Indonesia - December 4, 2019

5. Lecture "*Neonatal Jaundice: Research Possibility in Indonesia*" - AIRLANGGA University - Surabaya Indonesia - December 5, 2019

## 11. PUBLICATIONS

During 2019, the scientific production of the Italian Liver Foundation was 25 full papers and 9 reviews and 1 book chapter. The total impact factor was **122.5**. Below is a detailed list of published works.

### 11.1 Full papers (peer reviewed journals)

1. Pascut D , Krmac H , Gilardi F , Patti R , Calligaris R , Crocè LS , Tiribelli C . *A comparative characterization of the circulating miRNome in whole blood and serum of HCC patients*. Ski Rep. 2019 Jun 4; 9 (1): 8265. doi: 10.1038 / s41598-019-44580-x. "



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2. Pascut D, Cavalletto L, Pratama MY, Bresolin S, Trentin L, Basso G, Bedogni G, Tiribelli C, Chemello L. *Serum miRNA Are Promising Biomarkers for the Detection of Early Hepatocellular Carcinoma after Treatment with Direct-Acting Antivirals*. *Cancers* (Basel). 2019 Nov 11; 11 (11)
3. Pascut D, Sukowati C, Antoniali G, Mangiapane G, Burra S, Mascaretti LG, Buonocore MR, Crocè LS, Tiribelli C, Tell G. *Serum AP-endonuclease 1 (sAPE1) as novel biomarker for hepatocellular carcinoma*. *Oncotarget*, 2019.10: 383-394  
doi: 10.18632 / oncotarget.26555. eCollection 2019 Jan 8.
4. Dal Ben, Bongiovanni, Tuniz, Fioriti, Tiribelli, Moretti, Gazzin. *Earliest Mechanisms of Dopaminergic Neurons Sufferance in a Novel Slow Progressing Ex Vivo Model of Parkinson Disease in Rat Organotypic Cultures of Substantia Nigra*. *Int J Mol Sci*. 2019 May 6; 20 (9). pii: E2224. doi: 10.3390 / ijms20092224.
5. Bedogni G, De Matteis G, Fabrizi M, Alisi A, Crudele A, Pizzolante F, Signore F, Dallapiccola B, Nobili V, Manco M *Association of bright liver with the PNPLA3 I148M gene variant in 1-year-old toddlers* - *J Clin Endocrinol Metab*. 2019 Jan 14. Doi: 10.1210 / jc.2018-01998
6. Sukowati CHC, Anfuso B, Fiore E, Ie SI, Raseni A, Radillo O, Avellini C, Mazzolini G, Tiribelli C "Hyaluronic acid inhibition by 4-methylumbelliferone reduces the expression of cancer stem cells markers during hepatocarcinogenesis" *Sci Rep*. 2019 Mar 11; 9 (1): 4026. Doi: 10.1038 / s41598-019-40436-6. "
7. D'Auria E, Fabiano V, Bertoli S, Bedogni G, Bosetti A, Pendezza E, Sartorio MUA, Leone A, Spadafranca A, Borsani B, Stucchi F, Battezzati A, Zuccotti GV. "Growth Pattern, Resting Energy Expenditure, and Nutrient Intake of Children with Food Allergies." *Nutrients*. 2019 Jan 22; 11 (2). Pii: E212. Doi: 10.3390 / nu11020212. "
8. Bedogni G, Grugni G, Tringali G, Tamini S, Marzullo P, Sartorio A. "Assessment of fat-free mass from bioelectrical impedance analysis in men and women with Prader-Willi syndrome: cross-sectional study." *Int J Food Sci Nutr* . 2019 Feb 4: 1-5. doi: 10.1080 / 09637486.2018.1554623. [Epub ahead of print] "
9. Paparo L, Nocerino R, Bruno C, Di Scala C, Cosenza L, Bedogni G, Di Costanzo M, Mennini M, D'Argenio V, Salvatore F, Berni Canani R. "Randomized controlled trial on the influence of dietary intervention on epigenetic mechanisms in children with cow's milk allergy: the EPICMA study." *Sci Rep*. 2019 Feb 26; 9 (1): 2828. doi: 10.1038 / s41598-019-38738-w."
10. Anfuso B, Giraudi PJ, Tiribelli C, Rosso N. *Silybin modulates collagen turnover in an in vitro model of NASH* *Molecules*. 2019 Apr 2; 24 (7). pii: E1280. doi: 10.3390 / molecules24071280.
11. Gonzalez-Polo V, Pucci-Molineris M, Cervera V, Gambaro S, Yantorno SE, Descalzi V, Tiribelli C, Gondolesi GE, Meier D. "Group 2 innate lymphoid cells exhibit progressively higher levels of activation during worsening of liver fibrosis." *Ann Hepatol*.



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2019 Mar - Apr; 18 (2): 366-372. Doi: 10.1016 / j.aohep.2018.12.001. Epub 2019 Apr 25.

12. Moretti R, Caruso P, Gazzin S. "Non-alcoholic fatty liver disease and neurological defects." *Ann Hepatol.* 2019 May 6. pii: S1665-2681 (19) 30062-6. Doi: 10.1016 / j.aohep.2019.04. 007. "

13. Carnival ME, Lausada N, Juan de Paz L, Stringa P, Machuca M, Rumbo M, Guibert EE, Tiribelli C, Gondolesi GE, Rodriguez JV. "The Novel N, N-bis-2-Hydroxyethyl-2-Aminoethanesulfonic Acid-Gluconate-Polyethylene Glycol-Hypothermic Machine Perfusion Solution Improves Static Cold Storage and Reduces Ischemia / Reperfusion Injury in Rat Liver Transplant." *Liver Transpl.* 2019 Sep; 25 (9): 1375-1386. Doi: 10.1002 / lt. 25573. Epub 2019 Jul 4. "

14. Bedogni A, Bettini G, Bedogni G, Basso D, Gatti D, Valisena S, Brunello A, Sorio M, Berno T, Giannini S, Navaglia F, Plebani M, Nocini PF, Blandamura S, Saia G, Bertoldo F. "Is vitamin D deficiency a risk factor for osteonecrosis of the jaw in patients with cancer? A matched case-control study." *J Craniomaxillofac Surg.* 2019 Mar 13. pii: S1010-5182 (18) 31039-4. doi: 10.1016 / j. jcms.2019.03.007. "

15. Paparo L, Nocerino R, Bruno C, Di Scala C, Cosenza L, Bedogni G, Di Costanzo M, Mennini M, D'Argenio V, Salvatore F, Berni Canani R. "Randomized controlled trial on the influence of dietary intervention on epigenetic mechanisms in children with cow's milk allergy: the EPICMA study." *Sci Rep.* 2019 Feb 26; 9 (1): 2828. doi: 10.1038 / s41598-019-38738-w."

16. Giuffrè M, Macor D, Masutti F, Abazia C, Tinè F, Bedogni G, Tiribelli C, Crocè LS *Stiffness Probability In dex (SSPI): A Simple and Accurate Method to Detect Esophageal Varices in Patients with Compensated Liver Cirrhosis - Annals of Hepatology .* accepted

17. Giuffrè M, Macor D, Masutti F, Abazia C, Tinè F, Patti R, Buonocore MR, Colombo A, Visintin A, Campigotto M, Crocè LS. "Evaluation of spleen stiffness in healthy volunteers using point shear wave elastography" *Ann Hepatol.* 2019 Sep - Oct; 18 (5): 736-741. Doi: 10.1016 / j.aohep.2019.03.004. Epub 2019 Apr 25 "

18. Bedogni G, Mari A, De Col A, Tamini S, Gastaldelli A, Sartorio A. "Association of serum lipids with  $\beta$ -cell function in obese children and adolescents" *Endocr Connect.* 2019 Sep 1. pii: EC-19-0333. R1. Doi: 10.1530 / EC-19-0333 "

19. Zuccotti GV, Cassatella C, Morelli A, Cucugliato MC, Mamei C, Troiano E, Scaglioni S, Bedogni G. "Nutrient intake in aging infants and toddlers: 3-year follow-up of the Nutrintake study." *Int J Food Sci Nutr Nutr .* 2019 Sep 12: 1-9. Doi: 10.1080 / 09637486.2019.1663798. [Epub ahead of print] "

20. Mamei C, Cattaneo C, Panelli S, Comandatore F, Sangiorgio A, Bedogni G, Bandi C, Zuccotti G, Pagliarini E. "Taste perception and oral microbiota are associated



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*with obesity in children and adolescents.* " PLoS One. 2019 Sep 11; 14 (9): e0221656. Doi: 10.1371 / journal.pone.0221656. ECollection 2019. "

21. Nocerino R, Di Costanzo M, Bedogni G, Cosenza L, Maddalena Y, Di Scala C, Della Gatta G, Carucci L, Voto L, Coppola S, Iannicelli AM, Berni Canani R. *"Dietary Treatment with Extensively Hydrolyzed Casein Formula Containing the Probiotic Lactobacillus rhamnosus GG Prevents the Occurrence of Functional Gastrointestinal Disorders in Children with Cow's Milk Allergy . "* J Pediatr. 2019 Jul 18. pii: S0022-3476 (19) 30698-5. Doi: 10.1016 / j.jpeds.2019.06.004.

22. Mameli C, Invernizzi A, Bolchini A, Bedogni G, Giani E, Macedoni M, Zuccotti G, Preziosa C, Pellegrini M. *"Analysis of Retinal Perfusion in Children, Adolescents, and Young Adults with Type 1 Diabetes Using Optical Coherence Tomography Angiography . "* J Diabetes Res. 2019 May 8; 2019: 5410672. Doi: 10.1155 / 2019/5410672. ECollection 2019."

23. Moretti R, Caruso P, Dal Ben M, Conti C, Gazzin S, Tiribelli C *" Vitamin D, homocysteine, and folate in subcortical vascular dementia and Alzheimer dementia . "* Neuroscientific Research for Management of Dementia. Frontiers in Aging Neuroscience. 14 March 2019 | <https://doi.org/10.3389/fnagi.2019.00031>

24. Eslam M, Sanyal AJ, George J, on behalf of an international consensus panel (including Tiribelli C) *N AFLD: A consensus-driven proposed nomenclature for metabolic associated fatty liver disease* Gastroenterology 2019. accepted.

25. Leone A, Battezzati A, Bedogni G, Vignati L, Vanzulli A, De Amicis R, Foppiani A, Bertoli S. *Sex- and Age-Related Differences in the Contribution of Ultrasound-Measured Visceral and Subcutaneous Abdominal Fat to Fatty Liver Index in Overweight and Obese Caucasian Adults.* " Nutrients. 2019 Dec 9; 11 (12). pii: E3008. doi: 10.3390 / nu11123008.

## 11.2 Review articles and editorials

1. Muhammad Yogi Pratama, Devis Pascut, Muhammad Nasrum Massi, Claudio Tiribelli. *The role of microRNA in the resistance to treatment of hepatocellular carcinoma.* Ann Transl Med 2019 <http://dx.doi.org/10.21037/atm.2019.09.142>

2. Moretti, Caruso, Gazzin. *Non-alcoholic fatty liver disease and neurological defects.* Annals of Hepatology. Doi.org/10.1016/j.aohep.2019.04.007

3. Moretti, Caruso, Dal Ben, Conti, Gazzin, Tiribelli. *Vitamin D, homocysteine, and folate in subcortical vascular dementia and Alzheimer dementia. .* In Neuroscientific Research for Management of Dementia, Frontiers in Aging Neurosciences, Editors: MA. Kamal and FA. Nasrallah. Doi: 10.3389/fnagi.2019.00031





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4. Sukowati CHC, Reyes AP, Tell G, Tiribelli C Oncogenicity of virus hepatitis b and c in the initiation of hepatic cancer stem cells Hepatoma Research. , 2019; 5: 2
5. Tiribelli C. "Why, What and Where: 3W in hepatology" Ann Hepatol. 2019 May - Jun; 18 (3): 409. Doi: 10.1016 / j.aohep.2019.03.003. Epub 2019 Apr 15. "
6. Tiribelli C. "Blue or green for yellow? Which light is more beneficial for jaundiced newborns? Pediatr Res. 2019 Feb 21. doi: 10.1038 / s41390-019-0350-7"
7. Hulzebos C, Tiribelli C, "Repetitive bilirubin measurements in preterm infants prior to phototherapy: wise to use the rate of rise?" Pediatr Res. 2019 Jun 18. doi: 10.1038 / s41390-019-0469-6
8. Giuffrè M, Patti R, Pascut D, Macor D, Masutti F, Abazia C, Tinè F, Buonocore MR, Colombo A, Visintin A, Campigotto M, Sukowati CHC, Tiribelli C, Crocè LS MicroRNAs regulation of the process of neo-angiogenesis in hepatocellular carcinoma. Ann Gastroenterol Dig Dis, 1 (1): 009-016.
9. Bellarosa C, Vitek L, Tiribelli C. Induction of mild hyperbilirubinemia: Hype or real therapeutic opportunity? Clin Pharmacol Ther. 2018 Dec 27. doi: 10.1002 / cpt.1341

## 11.3 Book chapters

1. Heterogeneity of Hepatic Cancer Stem Cells in 'Stem Cells Heterogeneity in Cancer' Sukowati CHC Adv Exp Med Biol 2019, Vol. 1139 (ed: A. Birbrair) Springer Nature <https://www.ncbi.nlm.nih.gov/pubmed/31134495>

## 12. GROWTH OF THE FOUNDATION

In 2019 the following memoranda of understanding were signed with universities and national clinical-scientific bodies:

- FIF - FIT Memorandum of Understanding  
13 June 2019 - The FIT (International Foundation Trieste) coordinating ESOF 2020, represented by Stefano Fantoni and FIF in the person of President Adriano Del Prete, have signed an agreement to optimize scientific and educational collaboration and training between the two organizations, to promote and implement scientific research related to the translational medicine sectors Validity: three tacitly renewable years



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## 13. PRESS RELEASE

ilpiccolo.it

March 15, 2019

Blog d'autore > Una Mela al giorno - a cura dell'Azienda Sanitaria Universitaria Integrata di Trieste

Olio d'Oliva: passato presente e futuro del principe della dieta mediterranea

aise.it

Agenzia internazionale stampa estero

March 26, 2019

Celebrato a Rosario il 10° anniversario del Centro Argentina-Italia di Criobiologia (CAIC)

RadioRAI FVG

April 2, 2019

Radio broadcast "RADAR - Segnali dalla scienza, dalla cultura, dalla società"  
Interview with Prof. Claudio Tiribelli and Prof. Ferruccio Bonino

unr.edu.ar

April 8, 2019

CAIC: fructífera historia de la criobiología en Rosario

"Il Piccolo", April 9, 2019 pag. 37

Medicina personalizzata una nuova frontiera

RadioRAI FVG

June 11 2019

Radio broadcast "RADAR - Segnali dalla scienza, dalla cultura, dalla società"

Interview with Prof. Claudio Tiribelli on the occasion of the tenth anniversary of CAIC

esof.eu

June 12, 2019

FIT - FIF Memorandum Signing - June 13th

ansa.it

June 13, 2019

Esof 2020: siglata intesa con Fondazione Fegato su medicina

"Il Piccolo", July 2 2019 pag. 29

Il patto di ferro tra Esof e Fondazione Fegato



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Telequattro

July 30 2019

TV broadcast "Trieste in diretta"

Interview with Dr. Devis Pascut on FIF activity in scientific education and research

RadioRAI FVG

September 3 2019

Radio broadcast "RADAR - Segnali dalla scienza, dalla cultura, dalla società"

Interview with Prof. Claudio Tiribelli on the occasion of the international event DOTYR

Regione.fvg.it - Notizie dalla Giunta

November 22 2019

Ricerca: Fedriga, attività Fondazione Fegato importante per terapie

"Il Piccolo", November 25 2019, pag 20

Fedriga in visita alla FIF: Risultati importanti dalla ricerca sul fegato