



Communications and Publications Division (CPD) of the IFCC

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International Federation of Clinical Chemistry and Laboratory Medicine





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## EDITORIAL

### Message from the eNews Editor

*by Katherina Psarra*  
eNews Editor

Dear colleagues,

This is the last issue of the news for 2019. A whole year has passed full of news from all over the world and useful information arrives to you in the newsletter throughout the year. Silvia, the Insoft team and I have worked closely to offer you this beautiful world of clinical chemistry of IFCC. The contact to your colleagues from all over the world can be found in the newsletter and you can learn a lot about their everyday life in the lab.

In this issue, group work is celebrated once more in the awards of Univants. It is unbelievable what can be accomplished through collaboration of many different people and organizations. IFCC is an example of the gold work produced by this scientific collaboration.

Again your colleagues from many countries report their activities in the field of clinical chemistry. Stem cells research applications are presented and underline the importance of this great innovation.

Until the next year! Your contribution is immensely valuable.

Warm regards,  
Katherina Psarra



### News from the IFCC Website



#### eJIFCC Vol 30 n°4 - November 2019

eJIFCC Vol 30, issue 4 is now available. Guest edited by Dr. Katherina Psarra, Department of Immunology and Histocompatibility, Evangelismos Hospital, Athens, Greece - the theme of this issue is "Clinical flow cytometry in 2019".

Flow cytometry has evolved into an important diagnostic and research tool in several areas of medicine and biology, and the flow cytometry laboratory is an important part of the Haematology or Immunology departments in the hospital and a core laboratory in a research institute.

In this issue, the essential role of flow cytometry is described in the diagnosis of Paroxysmal Nocturnal Hemoglobinuria (PNH), in Primary immunodeficiency diagnosis, in diagnosing concerning childhood acute lymphoblastic leukemia, in DNA analysis for breast cancer, and in Immunology. A review of a summer school in Flow Cytometry for Immunology, showing the diversity of immunology topics' spectrum covered by flow cytometry (K. Psarra et al) complete this special thematic edition of the eJIFCC.

[Read more](#)



# IFCC WorldLab SEOUL 2020

24<sup>th</sup> INTERNATIONAL CONGRESS OF  
CLINICAL CHEMISTRY AND LABORATORY MEDICINE

May **24-28**, 2020  
Coex, Seoul, Korea



## IFCC: THE PEOPLE

### IFCC open positions



The following calls for nominations are currently open within the:

#### EDUCATION AND MANAGEMENT DIVISION EXECUTIVE COMMITTEE

- **Executive Committee (EMD-EC):** one member position. Applications close on 15th December 2019.
- **Committee on Clinical Applications of Cardiac Biomarkers (C-CB):** one member position. Applications close on 31st December 2019.
- **Committee on Distance Learning (C-DL):** two members positions. Applications close on 8th January 2020.
- **Committee on Clinical Molecular Biology Curriculum (C-CMBC):** two members positions. Applications close on 15th January 2020.
- **Committee on Analytical Quality (C-AQ):** one member position. Applications close on 22nd January 2020
- **Committee on Evidence-Based Laboratory Medicine (C-EBLM):** one member position. Applications close on 29th January 2020
- **Committee on Clinical Laboratory Management (C-CLM):** one member position. Applications close on 5th February 2020

#### CONGRESSES AND CONGRESSES COMMITTEE

- **Executive Committee (C-CC-EC):** one member position. Applications close on 10th January 2020.

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Applications for these positions should be submitted by IFCC members (National Societies or Corporate members) via e-mail to the IFCC Office ([cardinale@ifcc.org](mailto:cardinale@ifcc.org)), no later than the indicated dates.

For further information on the open Calls for Nominations, please visit the IFCC Call for Nominations page: <https://www.ifcc.org/executive-board-and-council/ifcc-call-for-nominations/>

If you are interested, please refer to your National Representative or Corporate Representative for information on procedures for nominations. Find your representative [here](#).

## IFCC: THE YOUNG SCIENTISTS

### The experience of a Young Scientist speaker

15th APFCB Congress – Jaipur, India  
17-20 November 2019

*by Marie Lenski*

*Specialist in Laboratory Medicine, PharmD  
PhD Student, Laboratory of Toxicology, University of Lille, France*

The 15th APFCB congress took place in Jaipur, India, between 17th to 20th of November 2019. Innovation and integration in Laboratory medicine were widely broached during several symposium presented by eminent speakers, specialists in laboratory medicine. Specific focus was on nowadays practice, as well as future challenges of our profession.

Among them, the **IFCC-Task Force-Young scientists (IFCC-TF-YS)** held a session about **“Clinical chemistry to clinical laboratory science - Future challenges”**, **Chaired by Prof. Maurizio Ferrari and Prof. Pradeep K. Dabla**. Four Young Scientists speakers laid out interesting ways to bring up this topic and share their practice and point of view.

**Dr. Marie Lenski and Dr. Santiago Fares Taie** respectively presented **“Changing Lab environment - Perspectives from Young Scientists”** and **“Are we prepared? How can we do it? Step to the future”**. They emphasized that tomorrow’s leaders should be prepared to change and learn to adapt and reinvent the medical laboratory to include new technologies.



Speakers (L-R): Marie Lenski, Santiago Fares Taie, Ashlin Rampul, Joe El-Khoury

*Article continued on next page*



IFCC TFYS Functional Meeting

(L-R): Santiago Fares Taie, Ashlin Rampul, Pradeep K. Dabla, Tomris Ozben, Joe El-Khoury, Damien Gruson



Chairpersons (R-L): Prof. Maurizio Ferrari, IFCC President and Prof. Pradeep K. Dabla

**Dr. Giulia Sancesario and Dr. Ashlin Rampul** presented, together, the “Core laboratory concept”, which takes an increasingly central importance in labs. On the other hand, **Dr. Joe El-Khoury** presented “Bringing your lab to the operating room”, with a concrete illustration concerning intraoperative parathyroid hormone testing. They shed light on the complementarities of these two facets of laboratory medicine organization, serving patients and clinicians in the same goal: adding value to patient care.

This session echoed with the **IFCC-TF-YS functional meeting** of the APFCB congress, where important projects of the Task Force were discussed, including Lab-surfing, Mentorship program, recent global survey for young scientists, and the TF-YS Research guide, a guide to conducting research in laboratory medicine.

These projects are central to achieve TF goals, notably to facilitate the communication between young scientists who are involved in laboratory medicine, to encourage young scientists to share experience of laboratory medicine and other healthcare practice around the world, or to disseminate and promote innovation and high quality scientific and clinical practice standards.

During the congress, delegates have also benefited from the presence of industrials that exhibited latest innovations and concrete possibilities of implementation. APFCB congress 2019 offered an amazing social event, permitting young scientists to network and meet colleagues, share experience, and enjoy an immersion in the Indian culture thanks to traditional Indian dances and food.

I want to thank the Organizing Committee for this high-quality congress especially Prof. Praveen Sharma, Chair Congress. I am thankful to TFYS Chair Pradeep K. Dabla & to Core member Guilaine Boursier for inviting me to be part of TFYS symposium as a speaker. The IFCC-TF-YS is looking forward to seeing Young Scientists in WordLab, Seoul, 2020.



IFCC TFYS Functional Meeting (L-R): Joe El-Khoury, Shanmuga Priya, Charu, Pradeep K. Dabla (TF-YS Chair), Santiago Fares Taie, Ashlin Rampul, Marie Lenski

## News from the IFCC Website



### 2020 IFCC Distinguished Awards

31 December 2019 is the extended deadline to submit nominations for the IFCC Distinguished Awards for presentation at the IFCC Congress in May 2020 in Seoul, Korea. The IFCC distinguished Awards will be conferred to scientists and clinicians who work in clinical chemistry and laboratory medicine or related disciplines to publicize their exceptional research and other contributions that have improved medical and healthcare, and to stimulate and encourage other scientists to accelerate their efforts in advancing clinical chemistry and laboratory medicine.

[Read more](#)



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## CONTRIBUTE TO THE IFCC eNews

### Cleveland Clinic's best practice receives recognition of distinction for innovations in laboratory stewardship



**Dr. Anita Reddy**  
MD



**Dr. Gary Procop**  
MD, MS



**Dr. Robert Wyllie**  
MD



**Dr. Brian Rubin**  
MD, PhD

Distinction awarded to team members at the Cleveland Clinic, Cleveland, Ohio, United States

Clinical laboratory stewardship is a topic of strong global interest, combining patient safety with financially responsible healthcare. Optimized clinical laboratory testing can decrease unnecessary phlebotomy, promote conscientious use of expensive testing, and ensure enablement of evidence-based care improving total cost of care and patient outcomes.

Beginning in 2011, best practices were pioneered at the Cleveland Clinic for application of clinical laboratory stewardship. An interdisciplinary committee for laboratory stewardship was created with representation from clinicians, pathologists, administrators, nurses and other caregivers. The committee began by determination of which tests would not need to be repeated more than once per day. With that information the committee then worked with their informatics team to build a program that automatically blocks duplicate orders of tests determined to only be needed once per day. Clinicians know right away if there was already a test performed that day, and the results of that test are automatically provided to the ordering clinician, negating the need of the clinician

to spend time looking for the results of the test they just attempted to order. For the event that a clinician determined a test had medical need to be repeated, the team developed the ability for the clinical care provider to override the block.

The committee also looked at genetic testing that should only have a need to be tested once in a lifetime. If the information system detects that the genetic test has ever been ordered and resulted on a patient, it will block the attempt to order and will direct the provider to the previous results in the medical record. By blocking a second identical genetic test, not only does the patient avoid unnecessary testing, the clinician and their administrative staff avoid spending time on attempting to obtain prior authorization for the testing. As the committee and the program continued to evolve, more interventions were developed and implemented into practice. The initiative now has more than 10 interventions in use at Cleveland Clinic.

This ground-breaking clinical laboratory stewardship initiative achieved remarkable results. Patient safety

*Article continued on next page*

was improved through the reduction in unnecessary clinical laboratory testing. Dr. Gary Procop, MD, MS, Medical Director and Co-Chair of Cleveland Clinic's Enterprise Laboratory Stewardship Committee, explains "It is often unappreciated how repeat testing on a patient without disease can result in false positive test results, which in turn results in more testing, and possibly unnecessary radiologic studies and treatments." Patients also experience greater satisfaction when they receive only the necessary testing, experiencing less pain and anxiety due to fewer phlebotomy collections.

Clinicians are more confident that their patients are receiving cost-effective laboratory testing, helping to provide relevant information to guide their clinical decisions. The health system provides improved patient experiences with reduction of unnecessary laboratory testing, which helps them to be the site of choice for patients in need of care. The initiative has prevented over 209,000 unnecessary tests, resulting in over \$5.9 million dollars of cost avoidance for payors.

The success of this clinical care initiative required collaboration between many disciplines, including four team leaders who were recognized with the 2019 UNIVANTS of Healthcare Excellence: Dr. Gary Procop, MD, MS, Dr. Robert Wyllie, MD, Director of Medical Operations, Cleveland Clinic, Dr. Anita Reddy, MD, Clinical Co-Chair Laboratory Stewardship Committee, Cleveland Clinic, Dr. Brian Rubin, MD, PhD, Chair of Pathology and Laboratory Medicine Institute at Cleveland Clinic.

### THREE KEY TAKEAWAYS:

1. Optimized clinical laboratory testing is essential to the provision of optimized cost-effective healthcare.
2. Personalized interventions can guide providers to the appropriate test to ensure targeted patient care.
3. Collaboration between clinicians and laboratorians for laboratory stewardship can lead to increased patient safety, improved patient experience and decreased healthcare expenses.

## World renowned research leads to live-saving measurably better healthcare for patients undergoing non-cardiac surgery

Distinction awarded to team members at Hamilton Health Sciences/Population Health Research Institute and McMaster University, Hamilton, Ontario, Canada

Approximately 200 million people undergo major non-cardiac surgery each year and, unfortunately, millions of patients experience complications. In more than a million cases annually, the complications can be life-threatening, including post-operative death within 30 days of surgery.

Leading experts at Hamilton Health Sciences Population Health Research Institute (PHRI) and McMaster University sought to improve patient outcomes by developing and implementing a clinical model that predicts risk of major perioperative events.

Their Vascular Events in Non-cardiac Surgery Patients Cohort Evaluation (VISION) became a massive global initiative that included over 40,000 patients from 23 hospitals in 14 countries on 5 continents. The insights and unprecedented outcomes from their research led

to over 30 peer-reviewed publications and multiple sub-studies with continued projects that further advance patient care. One of the most significant outcomes from their novel work includes a new diagnosis category of Myocardial Injury Due to Ischemia After Non-Cardiac Surgery (MINS) which was characterized and determined to be prognostically relevant as an independent predictor of 30-day mortality.

Their studies indicate that 84.2% of patients who experienced MINS would have undetected risk without their novel implementation of systematic troponin testing post-surgery.

Validity of the findings have been verified across different generations of troponin assays as well as different isoforms (Troponin I and Troponin T), enabling widespread application into routine clinical care.



(L-R): P. J. Devereaux, MD, PhD, Director, Division of Perioperative Care, McMaster University; Matthew McQueen, MB ChB, PhD, Professor Emeritus, Pathology and Molecular Medicine, McMaster University; Peter Kavsak, PhD, Clinical Biochemist, Juravinski Hospital and Cancer Centre, Hamilton Regional Laboratory Medicine Program, and Professor, Department of Pathology and Molecular Medicine, McMaster University; Not pictured, but part of this winning care team, are: Daniel Sessler, Ralph M. Meyer and Emmanuelle Duceppe.

One of the most notable recommendations from this work has been to implement pre and post-surgical troponin testing in patients undergoing non-cardiac surgery.

The testing allows for better identification of MINS and facilitates timely earlier interventions that lead to improved outcomes for patients and their families.

Another key recommendation originating from VISION studies is pre-surgical use of statins. Patients receiving pre-surgical statins experience significantly lower risk of all-cause mortality.

The findings from the VISION studies coupled with the data from the MANAGE trial (an international, randomized, placebo-controlled trial published in *The Lancet*) provides impressive evidence for the recommended use of 110 mg dabigatran twice daily to reduce the

risk of a major vascular complication in patients with MINS.

All the above recommendations were developed and implemented with excellence into clinical use by an innovative and integrated clinical care team who were recognized with distinction for the 2019 UNIVANTs of Healthcare Excellence Program.

Among the many contributors who unified to achieve measurably better healthcare performance were the project leads and team recipients of the 2019 healthcare excellence award from UNIVANTS, as follows: **Dr. P.J. Devereaux, MD**, scientific leader of Perioperative Medicine at the Population Health Research Institute; **Dr. Matthew McQueen, MD, PhD**, professor emeritus in the Department of Pathology and Molecular Medicine at McMaster University; **Dr. Peter Kavsak,**

**PhD**, clinical biochemist at the Juravinski Hospital and Cancer Centre and the Hamilton Regional Laboratory Medicine Program; **Dr. Daniel I Sessler, MD**, chair of Outcomes Research at the Anesthesiology Institute of the Cleveland Clinic; **Dr. Ralph M. Meyer, MD**, president of the Juravinski Hospital and Cancer Centre; and **Dr. Emmanuelle Duceppe, MD**, head of Perioperative Medicine PHRI.

Their novel use of laboratory medicine insights translated into actionable clinical care enabled measurable benefits to patients, payors, clinicians and their entire health system.

### THREE KEY TAKEAWAYS:

1. Post-operative complications in patients undergoing non-cardiac surgery are common and can be mitigated.
2. Strategic use of pre and post-operative cardiac troponin testing can lead to significantly improved risk classification and better patient outcomes.
3. Interdisciplinary collaboration that integrates the VISION research findings into clinical practice can lead to improved clinician confidence, better patient management, mitigated health risks, and lower overall healthcare expenditures.

## Cross-industry collaboration to improve detection and treatment of patients with familial hypercholesterolemia



**Adrienne Schmittat**  
MBA



**Mathias Barresi**  
Magister



**Felix Fath**  
M.Sc.



**Prof. Winfried März**  
MD



**Dr. Uwe Fraass**  
MD

Distinction awarded to team members at SYNLAB Academy, Mannheim, Germany, a subsidiary of SYNLAB Holding Deutschland GmbH, Augsburg, Germany, AMGEN GmbH, Munich, Germany

Familial hypercholesterolemia (FH) is an autosomal, inherited dominant genetic disorder of low-density lipoprotein (LDL) metabolism, causing severe elevations of LDL in patients.

FH is associated with markedly higher risk of premature cardiovascular disease and early death. However, FH is treatable and with appropriate therapy initiated at an early age, the patient's lifespan may approach that of an unaffected person.

Unfortunately, many patients who suffer from FH have their disease state go undetected, even with abnormal

cholesterol test results. This is frequently due to lack of awareness of the disease in the general population, and physicians lack of following up on elevated LDL levels.

Dr. Uwe Fraass, MD, Medical Development and Director of Cardio/Renal Medicine at Amgen GmbH, notes that "due to the premature disease manifestation in FH and the rapid pace of atherosclerosis in these individuals, timely detection and treatment has the potential to reduce expensive interventions and costs associated due to CV events early in life."

Article continued on next page

A cross-industry collaboration between SYNLAB Holding Germany GmbH and Amgen GmbH implemented an automated algorithm, called FH ALERT to automatically notify physicians when additional testing may be needed.

The FH ALERT is triggered when routine testing of total and/or LDL cholesterol returns results that are above thresholds in patients up to 60 years of age. The physicians who order the routine testing receive an automatically generated alert with a supplementary report that contains specialized information regarding FH.

This supplementary report provides resources for patient management recommendations, including a website that can be used to calculate the probability that their patient has FH. The report also includes information on how to utilize the Dutch Lipid Clinics Network (DLCN) scores to increase the pre-test probability before sending the patient for genetic testing or deciding to initiate treatment.

Genetic diagnosis of FH provides additional value for clinicians by identifying patients with molecular defects that multiply their risk for cardiovascular disease significantly.

Their care initiative has generated remarkable and immediate results. Within the first 3 months of implementation, over 3,500 patients were identified as at risk for FH, compared to the previous 3 months in which none were identified, with a subsequent increase of 24% compared to the previous year of FH

genetic testing. Risk in 211 of the identified patients were confirmed for heterozygous FH, triggering treatment and immediate care for previously undiagnosed patients. The program is now successfully implemented also in other areas in Germany and continuous education has significantly improved the awareness of general practitioners.

The success of the FH ALERT care initiative included collaborative effort by many disciplines and with five team leaders who were recognized with distinction by the 2019 UNIVANTs of Healthcare Excellence: Winfried Marz, MD, Director of SYNLAB Academy, Business Development Manager and Full Professor of Clinical Chemistry, Mr. Felix Fath, M.Sc., Project Manager for SYNLAB Holding Germany GmbH, Uwe Frass, MD, Ms. Adrienne Schmittat, MBA, External Consultant, and Mr. Mathias Barresi, Magister, Manager of Analytics/Data Management.

#### THREE KEY TAKEAWAYS:

1. LDL and total cholesterol are vital for identification of patients with potential risk for FH.
2. Strategic use of informatics can trigger automatic alerts, highlighting the need for additional diagnostic work-up in patients with previously unsuspected risk.
3. Key performance outcomes from the FH ALERT initiative include enhanced patient and physician awareness, improved patient risk stratification, increased clinician satisfaction, and improved health-care costs.



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## NEWS FROM REGIONAL FEDERATIONS AND MEMBER SOCIETIES



### News from the Japan Society of Clinical Chemistry (JSCC)

#### 2019 JSCC Academic Award and Article Awards

by Dr. Hideo Sakamoto

International Exchange Committee of JSCC

The Japan Society of Clinical Chemistry (JSCC) Academic Award and Article Award were given to persons who have made outstanding academic research in clinical chemistry. Award presentation was held at the 59th Annual Meeting of JSCC in Sendai, Japan on September 27-29, 2019. At the award presentation, award winners were congratulated by Dr. Masato Maekawa, president of JSCC for their outstanding work in clinical chemistry.

In this issue, we would like to introduce two winners of JSCC Award, so that everybody knows their outstanding work.

#### JSCC ACADEMIC AWARD

Hirofumi Jono, PhD (Associate professor, Department of Pharmacy, Kumamoto University Hospital, & Department of Clinical Pharmaceutical Sciences, Graduate School of Pharmaceutical Sciences, Kumamoto University) is the winner of the 2019 JSCC Academic Award, entitled: “Establishing individualized medicine for intractable cancer based on clinical molecular diagnostics – CYLD, a novel predictive marker for molecular targeted therapies”.

With innovative advancements in science and technology, cancer treatment has dramatically improved by discovering molecular targeted agents. However, identifying eligible patients and predicting their therapeutic effects still remain a great challenge. Because genetic and molecular differences of tumors significantly affect therapeutic effects in clinical practice, establishing individualized medicine based on precise

molecular pathogenesis and clinical molecular diagnosis is urgently required.

Cylindromatosis (CYLD) was originally identified as a tumor suppressor because loss of it causes a benign human tumor called cylindromatosis. Subsequent studies have revealed that CYLD acts as a negative regulator for various types of cell signaling pathways, such as, nuclear factor-kB (NF-kB) signaling, by deubiquitinating signaling molecules. Increasing clinical evidence suggest that dysregulation of CYLD through loss of its expression plays key roles in diverse pathological processes in various types of malignant tumors.



Hirofumi Jono, PhD  
Winner of the 2019 JSCC Academic Award

Article continued on next page

Dr. Jono discovered that loss of CYLD expression is not only involved in malignant transformation of a tumor, but also serves as a prognostic & predictive biomarker for various malignant tumors. In oral squamous cell carcinoma (OSCC) patients, lower expression of CYLD in invasive areas of OSCC tissues was significantly associated with the clinical features of deep invasion and poor overall survival. In addition, reduced CYLD protein expression was significantly correlated with decreased disease-free survival and reduced breast cancer-specific survival in primary breast cancer.

Moreover, Dr. Jono also revealed that CYLD expression in various types of tumors was associated with anticancer drug sensitivity. In OSCC, loss of CYLD expression triggered the development of resistance to anti-cancer drugs, such as, Cisplatin, one of the most effective chemotherapeutic agents commonly used for several malignancies.

In contrast, molecular target drug Bortezomib, a specific proteasome inhibitor, exhibited significant anti-tumor effects on the cisplatin resistance, caused by CYLD down-regulation in OSCC.

Those findings indicated not only the clinical significance of CYLD in the pathogenesis of tumors, but also the possibility of CYLD as prognostic & predictive biomarker for establishing novel molecular targeted therapies.

Future research development by Dr. Jono to elucidate more biological feature and clinical significance of CYLD may open novel strategies for establishing individualized medicine for intractable cancers.

### JSCC ARTICLE AWARD

Yutaka Suehiro, MD, PhD (Associate Professor, Department of Oncology & Laboratory Medicine, Yamaguchi University Graduate School of Medicine) is the winner of the 2019 Article Award, entitled: "Highly sensitive faecal DNA testing of TWIST1 methylation in combination with faecal immunochemical test for haemoglobin is a promising marker for detection of colorectal neoplasia".

Colorectal cancer (CRC) is the second most commonly diagnosed cancer in females and the third most in males in the world. It is estimated that 1.4 million new

cases and 693,900 deaths occurred worldwide in 2012. Because more than 95% of patients with CRC would benefit from curative surgery if diagnosed at an earlier or precancerous stage, it is important to develop highly sensitive and specific assays to detect precancerous lesions and CRC at the early stage, assays that are non-invasive, inexpensive, and easy to perform.

The main approach to CRC screening throughout the world is the faecal immunochemical test for haemoglobin (FIT), and patients with faecal haemoglobin > 20 µg haemoglobin/g faeces (equivalent to a 100 ng/mL cutoff of haemoglobin in sample buffer) are referred for colonoscopy. Although the sensitivity of the FIT for the diagnosis of colorectal neoplasia is 92.3% for CRC, it falls to 42.4% for the detection of potentially advanced precancerous lesions.

Furthermore, the FIT also carries the risk of false-positive results in patients with haemorrhoids, ulcers, and inflammatory bowel disease. To avoid the disadvantages of the FIT, more sensitive and specific screening methods are required. One solution is faecal DNA tests.



Yutaka Suehiro, MD, PhD  
Winner of the 2019 JSCC Article Award

As it was found TWIST1 methylation is specific to colorectal neoplasia, it was thought that detection of TWIST1 methylation from faeces samples might be useful for colorectal neoplasia screening. However, because the content of human DNA in faeces is very small, it is very difficult to detect TWIST1 methylation by conventional bisulphite-based methylation assays. Therefore, a new methylation assay was developed without bisulphite treatment, the combined restriction digital PCR (CORD) assay. Its sensitivity and specificity were evaluated in combination with and without the faecal immunochemical test for haemoglobin (FIT) for colorectal neoplasia detection from faeces samples.

For the CORD assay, DNA was treated with three methylation-sensitive restriction enzymes and an exonuclease, followed by measurement of TWIST1

methylation level by droplet digital PCR. Faecal DNA testing and FIT were performed on 109 patients with colorectal neoplasia and 10 control individuals. Basic performance testing showed that the CORD assay enabled detection of 0.14% of the TWIST1 methylation level for the lymphocyte DNA. The CORD assay from faeces samples had a sensitivity of 22.2% for non-advanced adenoma, 47.1% for advanced adenoma, and 33.7% for colorectal cancer (CRC), and a specificity of 100.0%. Combination of FIT and faecal CORD assay increased sensitivity to 82.4% for the detection of advanced adenoma.

They developed the CORD assay, a possible highly sensitive methylation assay. Combination of faecal CORD assay with FIT may provide an alternative screening strategy for colorectal neoplasia, especially for potentially precancerous lesions.



## News from the Confederación Unificada Bioquímica de la Republica Argentina (CUBRA)

### CUBRA: XV National & Biochemical Congress

*by María Alejandra Arias  
CUBRA President  
IFCC Argentine Representative*

On September 25th to 27th of this year the fifteenth edition of the National & Biochemical Congress took place at the Gala Hotel & Conventions Center in the city of Resistencia, El Chaco, Argentina.

Before the event 5 pre-congress courses were organised: three of them were theory and practice, and the rest were only theory.

The topics were: Microbiology, Hematology, Clinical Chemistry and Bromatology.

Those courses were attended by a great number of professionals and students.

Each day, three intra-congress courses were offered; among the topics, important results were obtained because of the quality management, on charge of the CUBRA Quality Commission (C3).

Also, three conferences were developed by notable professionals, coming from abroad as well as national ones.

Seventy speakers participated, among them the ones who were from Paraguay, Chile and Mexico.

Likewise, several activities were implemented: lunches with expert professionals, symposia and round table meetings. Social activities were very variable with the main objective of generating different themes.

As for the commercial exhibition we had the participation of 25 prestigious companies.

Regarding free communications, more than 100 abstracts were received.



**CUBRA's Executive Board:**

L-R: Dr. Carlos Navarro (Secretary); Dr. Miguel Acuña (Pro Treasurer); Dr. Agustín Bolontrade (Pro Secretary); Dr. Silvia Deus (Treasurer); Dr. Enrique Ocampos (Vice-President); Dr. María Alejandra Arias (President); Dr. Dante Spizzo (President of Colegio Bioquímico del Chaco) with Dr. María Cecilia López, (Secretary of the Executive Board of Colegio Bioquímico del Chaco).



Photo on the left (L-R):  
 Dr. María Monserrat Blanes (IFCC & COLABIOCLI Member, CUBRA XV speaker);  
 Prof. Leverton Ortiz Caceres (IFCC-Abbott Visiting Lecturer, CUBRA XV speaker);  
 Dr. María Alejandra Arias (President of CUBRA);  
 Dr. Enrique Ocampos (Vice-President of CUBRA)

Awards were the following: two CUBRA awards and two mentions, one COCERBIN award and a given award to the Biochemical College of Chaco, entity in charge of the Congress organization.

CUBRA would like to thank for the support received from IFCC and Abbott, allowing the participation of Drs. Leverton Ortíz Cáceres (Chile) & Isela Parra (México), through the Visiting Lecturer Program (VLP). We would also like manifest special gratitude to Dr. María Montserrat Blanes (Paraguay) for her selfless participation.

CUBRA would like to highlight the accomplished effort from our Chaco colleagues and the excellent organization of the event, crowned by success of the organization of the fifteenth National & Biochemical Congress.



Participants at the celebration of “2019 Año del Centenario de la Profesión Bioquímica”



## News from the Asociación Bioquímica Uruguaya (ABU)

XII Congreso Uruguayo de Bioquímica Clínica  
3-5 October 2019 – Montevideo, Uruguay



*by Dr. Stella Raymondo*  
*IFCC National Representative Uruguay*  
**QF. BC Beatriz Varela**  
*ABU Executive Board member*  
**Dra. Graciela Borthagaray**  
*Scientific Committee President*

The XII Congreso Uruguayo de Bioquímica Clínica under the theme “New challenges in the era of laboratories 4.0” was hosted by the Asociación Bioquímica Uruguaya (ABU) and was held in Radisson Victoria Plaza Hotel.

The theme of the congress was related to the current concerns of laboratory professionals regarding the impact of automation and technological changes on their profession.

The core programme was prepared with a strong input from the Scientific Committee and the Congress Organizing Committee. The Scientific Programme covered the following topics: Biochemistry, Genetics, Coagulation, Hematology, Immunology, Laboratory Emergency, Microbiology, Neonatal Research, Quality Assurance, Reference Intervals, among others.

A wide range of scientific sessions were offered, comprising Courses, Symposia, Speeches, Plenary Lectures, as well as Oral Free Paper Session and Poster Sessions.



Opening Ceremony, at the Presidency table  
(L-R): Q.F. Fernando Antúnez, Dra. Patricia Esperón, Dr. Álvaro Mombrú and Dra. Stella Raymondo



Opening Lecture delivered by VLP IFCC- Abbott Prof. Khosrow Adeli (Moderator: Dra. Stella Raymondo)



Welcome cocktail with QF BC Beatriz Varela (ABU); QF Fernando Antúnez (President of ABU); Dr. Khosrow Adeli (VLP IFCC-Abbott, recently voted as President Elect of IFCC); Dra Monica Spalvieri (Argentina); QF BC Ana Piana (ABU); Dra Patricia Esperon (President of Congress)

The selected topic was developed with the participation of 39 speakers, with experts recognized at national, regional and international levels.

There were a total of 12 foreign speakers from Argentina, Canada, Chile, Italy and the USA.

It was an honor for the congress to have as a keynoter the recently elected president of IFCC, Prof. Khosrow Adeli, who gave outstanding lectures.

#### **THE CONGRESS:**

Two halls were used throughout the congress, both of which were comfortable and well equipped with modern audiovisual facilities.

A commercial exhibition (16 booths) was held in the area of the coffee break. Posters (26) were accommodated in a third hall and remained hung throughout the congress. A total of approximately 350 participants attended the congress (clinical biochemists, pathologists, laboratory technicians, and students, among others).

#### **OPENING CEREMONY:**

At the opening ceremony there were brief speeches of welcome from the President of ABU (Q.F. Fernando Antúnez), the President of the Congress (Dra. Patricia Esperón), the President of COLABIOCLI (Dra. Stella Raymondo), and the Dean of the Faculty of Chemistry (Dr. Alvaro Mombrú).



Welcome cocktail



ABU Executive Board

L-R: Dra. Stella Raymondo, Q.F. B.C. Beatriz Varela, B.C. Natalia Amor, Q.F B.C Laura Yametti, Q.F. Fernando Antúnez, Dra. Ana Lena and Q.F. B.C. Ana Piana

Article continued on next page

During the ceremony, the Archavaleta Prize was awarded to P. Audicio, S. Méndez, C. Queijo, and A. Lemes for the best complete scientific work, “Characterization of Patients with Congenital Glycosylation Defects: Experience in Uruguay”, which was presented by Scientific Committee President (Dra. Graciela Borthagaray).

A welcome cocktail, which contributed to social interaction and networking, completed the opening.

### **SCIENTIFIC PROGRAMME:**

There were two plenary lectures delivered by Prof. Khosrow Adeli entitled “Electronic apps and medical diagnosis data management” and “Value and impact of the clinical laboratory on health care”, four lectures and fifteen symposia (held as parallel sessions).

A broad spectrum of laboratory and clinical topics were included from all branches of laboratory medicine. Simultaneous translation was provided whenever a talk was given in English.

Two pre-congress courses were held on Thursday entitled: “International course on interference factors in the preanalytical phase” and “Autoimmune Hepatopathies”. On Friday and Saturday two workshops were held during lunch break, sponsored by the industry (lunch boxes were handed to attendees).

### ***There were three IFCC Visiting Lecturers:***

- Dr. Khosrow Adeli (CA)
- Dr. Gabriel Lima Oliveira (BR- IT)
- Dr. Carlos Von Mühlhen (US)



Vitamin D Symposium

Prof. Khosrow Adeli gave two plenary lectures and participated in a symposium; Dr. Carlos Von Mülhen and Dr. Gabriel Lima-Oliveira participated in the pre-congress courses and in a symposium.

Uruguayan Biochemical Association (ABU) feels very grateful to the IFCC-Abbot VLP for its generous collaboration that allowed our Congress to be successful and updated in the most advanced topics of the modern clinical laboratory.

#### **CLOSING CEREMONY:**

At the closing ceremony, the award to the best poster presentation was given to the work “Proteomic analysis of *Klebsiella pneumoniae* ST258 producers of KPC-2 in response to antibiotic therapy combined with meropenem” by C. Cayota and col. and a mention was awarded to the work “Survey of the degree parasitic pollution of soil on an irregular settlement of Montevideo city” by J. Blanco and col.

#### **SOCIAL EVENTS:**

There was a social event every evening of the congress, as per below.

Thursday: Welcome cocktail

Friday: Guest dinner at La Vaca restaurant

Saturday: Congress dinner and dance at Che Montevideo

All these events were informal, enjoyable, and took place in a playful laid-back atmosphere.

An ABU members meeting was held on Friday afternoon.



Guest Dinner in La Vaca restaurant



## News from the Spanish Society of Laboratory Medicine (SEQC<sup>ML</sup>)

### Conference on the Future of Laboratory Medicine organized by the SEQC<sup>ML</sup>

# SEQC<sup>ML</sup>

The SEQC<sup>ML</sup>, in Zaragoza, addresses the changing model facing Laboratory Medicine, during a conference where professionals were the protagonists.

- Topics such as the application of big data to Laboratory Medicine, talent management, and resident training were addressed
- One hundred people attended the sessions, including SEQC<sup>ML</sup> members and representatives of the Administration and the in vitro diagnostic industry
- Another of the objectives of the conference was to promote and stimulate collaboration with other scientific societies

Zaragoza, October 21, 2019 - Laboratory Medicine, which plays an essential role in the healthcare process, has been facing a process of paradigm change in recent years, derived from the incorporation of new technologies. These technical advances imply great possibilities for improvements that benefit patients, but also make it necessary for clinical laboratory professionals to update their knowledge and management models.

In order to help these professionals update their knowledge, the Spanish Society of Laboratory Medicine (SEQC<sup>ML</sup>) recently organized a Conference on the **Future of Laboratory Medicine**. The event, which took place in Zaragoza, served to strengthen reflection and debate on the Laboratory Medicine's current situation, strategic outlook, and its future projection.

More than a hundred people, the majority of them members of the SEQC<sup>ML</sup>, together with representatives from the Administration, from the in vitro diagnostic industry, and from scientific societies in the healthcare field, participated in the sessions that addressed topics such as **the application of big data to Laboratory Medicine, talent management, and resident training** in the face of the challenge of unifying the Clinical Analysis and Clinical Biochemistry specialties.

#### *Big data applied to laboratory medicine*

One of the central issues of the conference was that of technological developments and how advances such as big data can influence the way patients' clinical data are collected and managed. "Currently, laboratories already process large amounts of data and it can be said that, quantitatively, they are the main data producers and processors in health organizations," said Dr. Fernando Cava, Director of Laboratorios Unilabs-BR Salud, who indicated that the greatest impact of technologies such as big data lies in the possibility of finding hidden information, combining massive data from different sources to obtain relevant information for the patient.

As explained by Dr. Cava, **"the more information we can associate with the patient, the greater the ability to obtain knowledge and beneficial results for the patient and the population in general."** "In this sense, laboratories and their professionals should play a significant role," he added.

#### *Talent management*

In this fast-changing environment, Laboratory Medicine must redefine its position, not only acting in its classic role as a provider of laboratory results, but also **adopting new roles and responsibilities in the clinical dialogue with patients and doctors**. All this will entail "new responsibilities and ethical and legal

issues”, according to Dr. José Puzo, Head of the Clinical Analysis and Biochemistry Service of the San Jorge University Hospital (Huesca), who during the conference coordinated the session entitled ‘The role of the Laboratory Medicine specialist in the laboratory of the future: classic and new skills, abilities, and responsibilities’.

“Our role in health services is and will be increasingly complex. We work with people, technology, processes, and systems. We have to be leaders and team members,” summed up Dr. Puzo, in relation to the need for better management of talent and laboratory teams. The specialist also pointed out some of the future trends that will reduce hospital visits, such as virtual inter-consultation, day hospital, or home hospitalization, which will be a challenge for laboratory professionals. “De-localized medicine” presents us with the need to obtain **analytical tests outside the conventional healthcare environment** and ensure fast, reliable, and safe results,” he said.

### *The future of training in laboratory medicine*

The Conference on the Future of Laboratory Medicine was also aimed at contributing to reducing a certain sense of uncertainty that exists in the Clinical Laboratory field after the unification of the specialties of Clinical Analysis and Clinical Biochemistry was canceled following the repeal of the Royal Decree that implemented the core subject training system. **As the Ministry of Health has stated its intention to resume the merger of the two specialties**, the conference hosted a session entitled ‘Resident training in the specialty of Laboratory Medicine. Specialty program in the core subject’ in which it sought to get a head start on what could be the resident training program in the new and unified specialty. This was presented in relation to the other issues



discussed in the Conference, technological advances and changes in personnel management.

“The current programs of the Clinical Analysis and Clinical Biochemistry specialties have become somewhat obsolete. **Continuous technological changes and the new advances in scientific knowledge itself make an exhaustive revision of them necessary, adapting them to the current reality**”, explained Dr. Josep Lluís Bedini, Head of the Operational Area of the Hospital Clínic de Barcelona and coordinator of the session, who stressed that the organizational changes that have occurred in a good part of the laboratories of the country have been an additional challenge for both the training of residents and for professional development.

#### *Collaboration with other scientific societies*

One of the objectives of this conference was to promote and stimulate collaboration with other medical

scientific societies, **in order to highlight the value of Laboratory Medicine**. “We want to be the engine of change of the Clinical Laboratory model; so that, guaranteeing the quality of the results and the sustainability of the system, we can provide the value that both the patient and society need,” said Dr. Isabel Llompart, regional coordinator of the Balearic Laboratories Network and Head of the Clinical Analysis Service of the Son Espases Hospital, who coordinated a session focused on collaboration with other scientific societies.

Among the issues that were brought up, the following topics, among others, were addressed: **how to facilitate the exchange of scientific information; establish consensus protocols for the diagnosis, prognosis, and monitoring of patients; promote studies that help define the value of the implementation of analytical tests in the health of the population, and establish areas of collaboration in the area of training.**



Participants in the Conference on the Future of Laboratory Medicine

## The stem cell euphoria – How far can we ride the wave?

by Dr. Shweta Bhatt

Chief Scientific Officer (CSO)

Yashraj Biotechnology Ltd., Navi Mumbai, India

With the advent of technologies like induced pluripotent stem cells (iPSCs), that is considered the most significant and impactful life-science discovery of the past decade and earned the Nobel Prize in Medicine (2012) for the discoverer scientist, Dr. Shinya Yamanaka (USA/Japan), the in vitro models for drug testing have again come to the fore of the pharmaceutical drug discovery and development research. The capacity of these cells to self renew, as well as properties of pluripotency, that allow differentiation to any cell type of the body, opens a plethora of opportunities for drug screening and toxicological analyses in preclinical settings. Their capacity to retain the genetic and molecular profile of the original donor (patient) of adult somatic cells has opened new vistas in the field of stem cells and regenerative medicine, which was earlier

mired by ethical concerns associated with embryonic stem cell research. The various avenues of research and development that utilize the stem cell and related technologies are, 1) **Bio-banking** of human clinical samples, 2) Use of iPSCs and its derivatives for **Drug Discovery and Disease Modeling**, 3) Use of iPSC Derived Differentiated Lineages such as Cardiomyocytes, Hepatocytes, Neuronal Cells for **Drug Toxicology**, and 4) **Regenerative Medicine and Therapy**.

### STEM CELLS: APPLICATIONS TO CANCER RESEARCH

Recent advances in cancer prevention and management have led to an exponential increase of cancer survivors worldwide. Regrettably, cardiovascular disease and liver failure has risen in the aftermath as one

**Figure 1** Primary Epithelial Culture Generation from Human Breast Tumor & Breast Adjacent Normal Tissue  
a-e: Passage 0, 1, 2, 3 and 4 primary human breast cancer epithelial cells, respectively

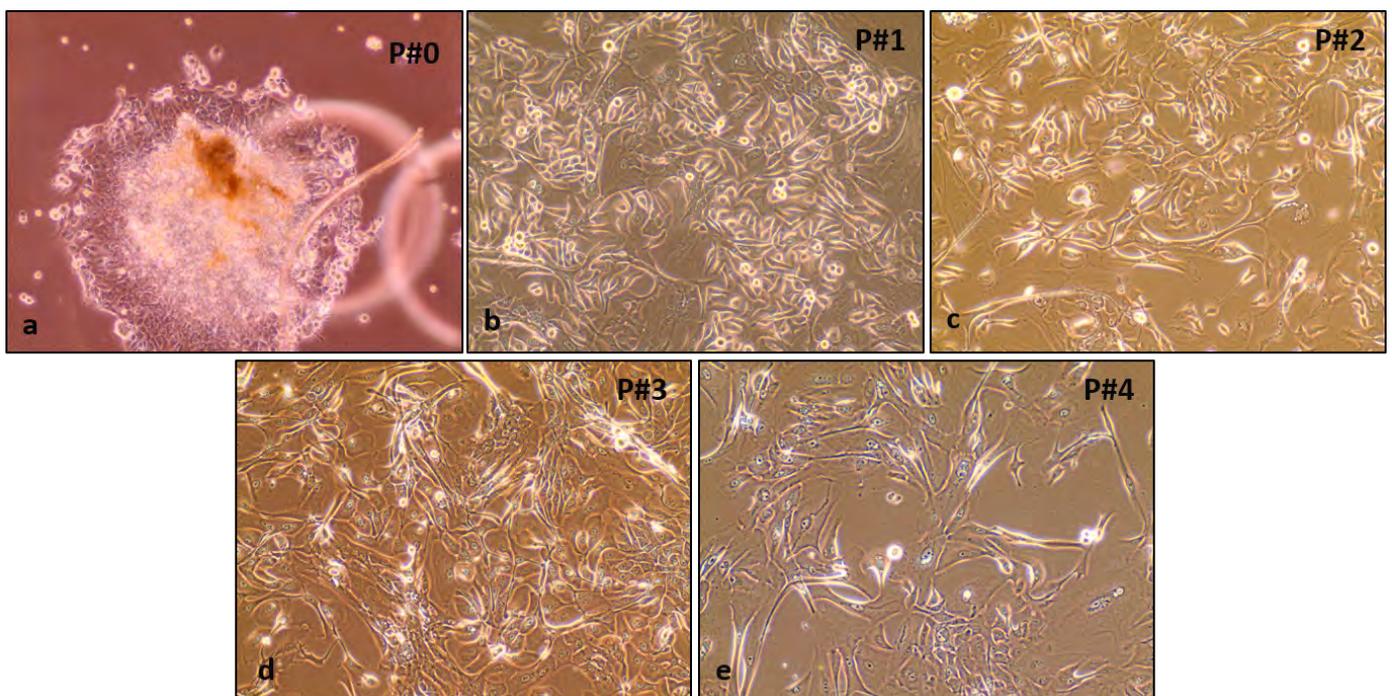
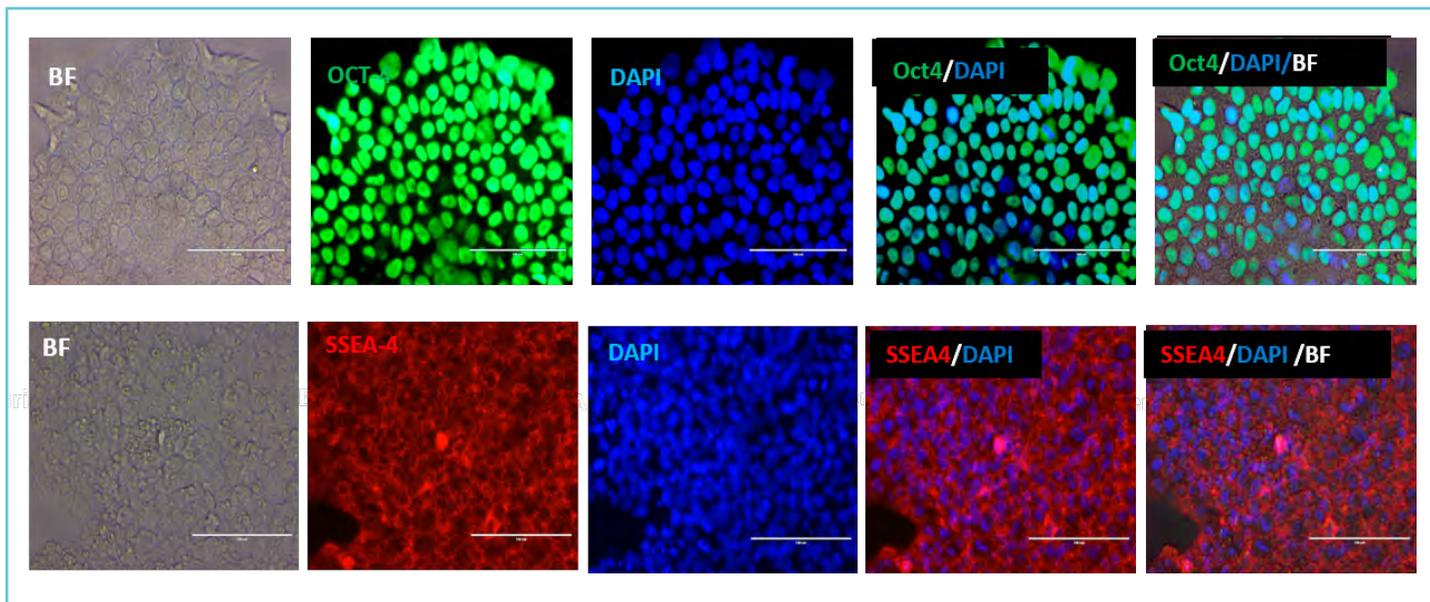


Figure 2

## Human Induced Pluripotent Stem Cells (iPSCs) expressing Pluripotency Markers OCT4 and SSEA4



of the most devastating consequences of cancer therapies. Estrogen Receptor (ER+) expressing breast cancers account for more than 70% of the total reported breast cancer cases worldwide, for which anthracyclines (such as Doxorubicin, Epirubicin and Idarubicin) report the most robust regression of cancer upon treatment. Despite its broad effectiveness, anthracycline therapy is associated with irreversible dilated cardiomyopathy and in many cases hepatic failure, which largely leaves cancer therapy insufficient.

Breast cancer patients treated with anthracycline derivative doxorubicin show decreased left ventricular ejection fraction (LVEF) when the cumulative doxorubicin dose exceeds 350 mg/m<sup>2</sup> body. In a study comprising 4000 patients, about 18% developed congestive heart failure (CHF) after receiving  $\geq$  700 mg/m<sup>2</sup> body of doxorubicin [ref. Volkova M et al. *CurrCardiol Rev.* 2011 Nov; 7(4): 214–220]. In consequence, reduction of maximum cumulative dose of 550 mg/m<sup>2</sup> body was recommended, which unfortunately results in reduced anti-tumor efficiency. Notably, even when adhering to the suggested maximum doxorubicin dose, approximately 26% of patients are at risk to develop CHF and 15% are at risk of liver failure. Therefore, prevention of post chemotherapy cardiomyopathy and liver failure has great clinical relevance.

This in turn necessitates the development of novel preclinical testing models and platforms that are a true representation of the human pathophysiology, especially in case of cardiac anomalies which the various animal systems fail to mimic. Major lacuna in developing such model system(s) is the unavailability of cardiac tissue samples, for in vitro disease modeling studies, from patients with breast cancer or age and gender-matched healthy controls. To realize this unmet scientific need, we propose the use of induced pluripotent stem cell (iPSC) technology.

These cells are considered the most significant and impactful life-science discovery of the past decade and they present an inexhaustible resource for in vitro modeling of human diseases. Yashraj Biotechnology Ltd. (YBL) has been actively working in this topic and has successfully developed a bio-bank of human clinical samples from patients with cancers originating in different tissues, developed iPSCs and differentiated derivatives derived from such patients that retain the patient genetic and molecular profile and thus are a unique and valuable resource to investigate the disease, test chemotherapeutic drugs for their efficacy and screen them for possible toxicological side-effects on vital organs.

Our stem cell program has developed various primary cancer cell and stem cell derived platforms from

human subjects (healthy volunteers and/or patients with cancer originating in different tissues), for use in preclinical drug discovery, screening, efficacy testing and toxicology.

Please refer to <https://www.yashraj.com/stem-cell/> for our stem cell product and service portfolio and see <https://www.yashraj.com/newsletters/> for our quarterly newsletter. It promises robust preclinical testing

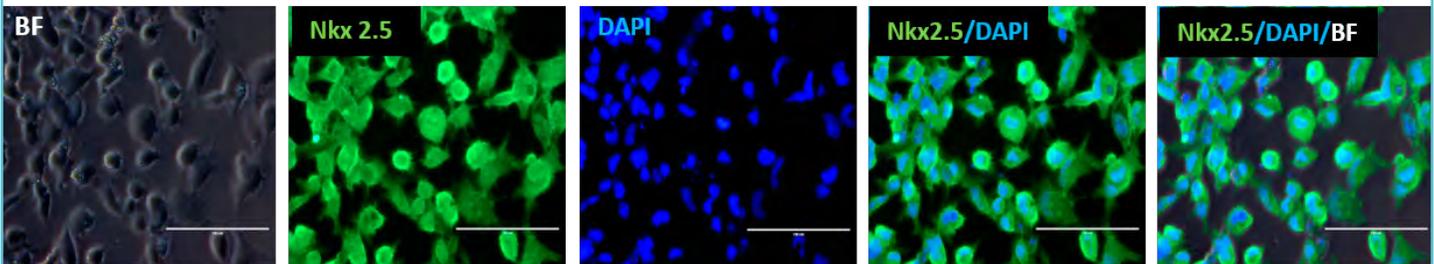
of drugs under development and it is likely to reduce the false positive drugs to enter human clinical trials by providing a source of human samples and derivatives to test these drugs on at the preclinical stage.

This technology is poised to bring down the failure rate in drug discovery and development and also reduce the risk of humans by preventing exposure to improperly tested drugs during clinical trials.

**Figure 3** Human Induced Pluripotent Stem Cells (iPSCs) Derived Mature and Functional Cardiomyocytes

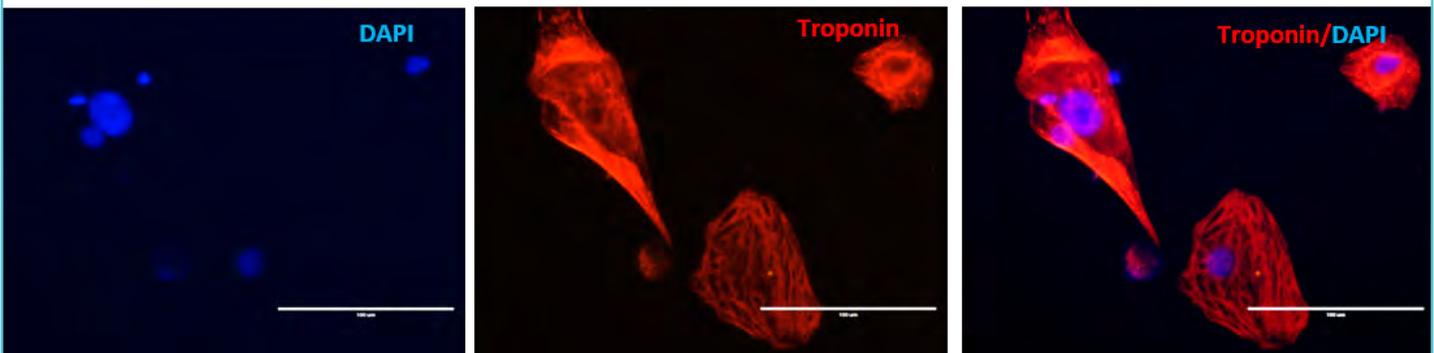
**A) Immature iPSC-derived Cardiomyocytes Expressing Nkx2-5**

*Immature cardiomyocytes by Nkx2.5*



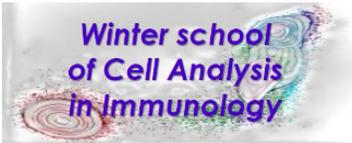
**B) Mature and Functional iPSC-derived Cardiomyocytes Expressing Troponin T, a Hallmark of Functional Human Cardiac Cells**

*Mature cardiomyocytes by Troponin T*



# IFCC'S CALENDAR OF CONGRESSES, CONFERENCES & EVENTS

## Calendar of IFCC Congresses/Conferences and Regional Federations' Congresses

Mar 9 - 13, 2020		<i>Winter School on Cell Analysis in Immunology</i>	Geneva, CH
May 22 - 24, 2020		<i>International Congress of Pediatric Laboratory Medicine - WorldLab Seoul 2020</i>	Seoul, KR
May 24, 2020		<i>IFCC C-POCT Satellite Meeting - WorldLab Seoul 2020</i>	Seoul, KR
May 24 - 28, 2020		<i>XXIV IFCC WorldLab Seoul 2020</i>	Seoul, KR
May 29 - 30, 2020		<i>IFCC - ICHCLR Workshop - Barriers to global standardization of clinical laboratory testing: reference materials and regulations</i>	Seoul, KR
May 16 - 20, 2021		<i>XXIV IFCC - EFLM EuroMedLab Munich 2021</i>	Munich, DE

Calendar continued on next page

Oct 15 - 18, 2022		16th APFCB Congress 2022	Sydney, AU
May 21 - 25, 2023		XXV IFCC - EFLM WorldLab EuroMedLab - Rome 2023	Rome, IT

### Calendar of events with IFCC auspices

Feb 25 - Dec 31, 2019	<i>Bolivian Continuing Education Program (PROBOECO) of the Bolivian Society of Clinical Biochemistry</i>	Different cities, BO
Jun 5 - Dec 24, 2019	<i>Postgraduate course of analytical quality in the clinical laboratory</i>	Online event
Dec 6 - 7, 2019	<i>53e JBP, Journées de Biologie Praticienne</i>	Paris, FR
Dec 9 - 10, 2019	<i>3rd Conference on Medical Laboratory Accreditation and Quality Systems (CLAQ) - Lab medicine in the transformative decade: digital technologies, artificial intelligence and quality management"</i>	Belgrade, SRB
Dec 13 - 14, 2019	<i>TBS Academy Biostatistics Course for Medical Laboratory Specialists</i>	Izmir, TR
Dec 13 - 19, 2019	<i>7th Annual Conference of Association of Medical Biochemists of India – AMBICON 2019</i>	Ludhiana, IN
Dec 18 - 20, 2019	<i>3rd International Conference on Natural Products for Cancer Prevention and Therapy</i>	Kayseri, TR
Feb 6 - 7, 2020	<i>International Congress on Quality in Laboratory Medicine</i>	Helsinki, FI
Mar 14 - 16, 2020	<i>XXIII Congreso Nacional para el Análisis de la Garantía de la Calidad en el Laboratorio Clínico</i>	Tuxtla Gutierrez, MX

Calendar continued on next page

Mar 25, 2020	<i>42th Conference LABAC "First International Conference on in vitro hemolysis"</i>	Paris, FR
Apr 23 - 25, 2020	<i>VI Jornadas Bioquímicas de Cuyo 2020</i>	San Luis, AR
Apr 27, 2020	<i>LabMed Next</i>	Rome, IT
Jun 9 - 12, 2020	<i>XXXVII Nordic Congress in Medical Biochemistry</i>	Trondheim, NO
Jul 4 - 7, 2020	<i>24th International Conference on Laboratory Medicine and Pathobiology - An Expert Forum on Innovation in Clinical and Laboratory Medical Sciences</i>	Samos, GR
Sep 3 - 25, 2020	<i>The innovations and trends that are shaping the future of laboratory medicine and Neighbouring Countries: the Same Professional Aim in Laboratory Medicine</i>	Belgrade, SRB
Sept 28 - Oct 1, 2020	<i>10th Santorini Conference "Systems medicine and personalized health and therapy" – "The odyssey from hope to practice: Patient first – Keeps Ithaca always in your mind"</i>	Santorini, GR
June 10 - 11, 2021	<i>8th International Symposium on Critical Care Testing and Blood Gases</i>	Biarritz, FR

6-7 FEBRUARY 2020 | HELSINKI, FINLAND

# International Congress on Quality in Laboratory Medicine

## Optimizing the Quality and Use of Laboratory Results

Labquality Days is one of the largest international congresses in 2020 focused on quality and laboratory medicine. The congress is held 6-7 February 2020 at Messukeskus Helsinki, Finland. The leading theme of the 2020 congress is Optimizing the Quality and Use of Laboratory Results.

Come and enjoy the inspiring scientific atmosphere and spend a couple of days in lively Helsinki!

THE CONGRESS

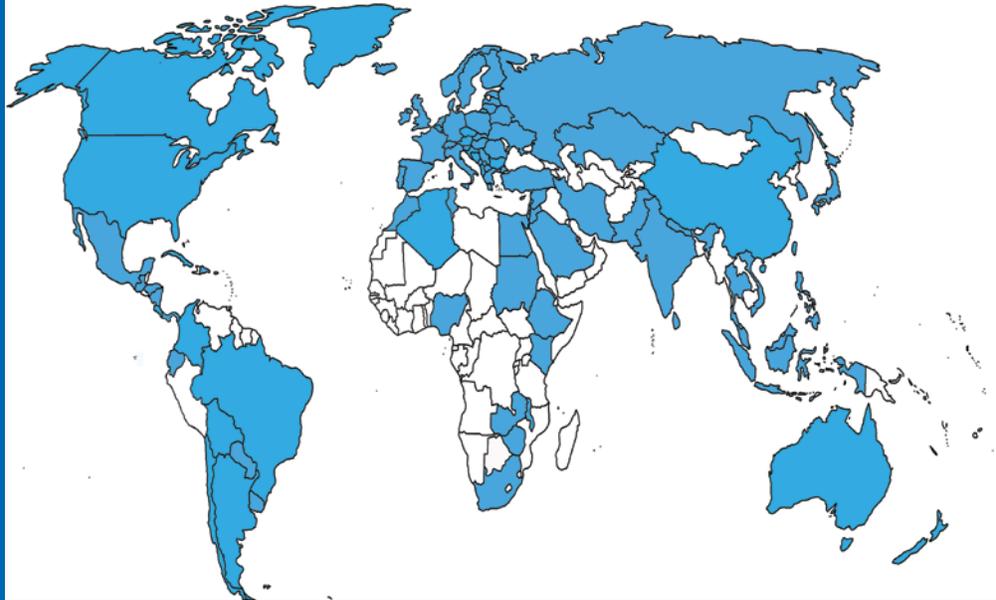
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## Regional Federations

Arab Federation of Clinical Biology (AFCB)  
 African Federation of Clinical Chemistry (AFCC)  
 Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB)  
 European Federation of Clinical Chemistry and Laboratory Medicine (EFLM)  
 Latin America Confederation of Clinical Biochemistry (COLABIOCLI)  
 North American Federation of Clinical Chemistry and Laboratory Medicine (NAFCC)



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 Iran: Iranian Association of Clinical Laboratory Doctors (IACLD)  
 Jordan: Society for Medical Technology & Laboratories (SMTL)  
 Kazakhstan: Public Association - Federation of Laboratory Medicine (FLM)  
 Mexico: Federación Nacional de Químicos Clínicos (CONAQUIC A.C.)  
 Nepal: Nepalese Association for Clinical Chemistry (NACC)  
 Philippines: Philippine Council for Quality Assurance in Clinical Laboratories (PCQACL)  
 Russia: Regional Association for Clinical Laboratory Diagnosis, St. Petersburg  
 Serbia: Serbian Society for Clinical Laboratory Medicine and Science (SCLM)  
 Spain: Asociación Española de Farmacéuticos Analistas (AEFA)  
 Turkey: Society of Clinical Biochemistry Specialists (KBUD)  
 Ukraine: Association for Quality Assurance of Laboratory Medicine (AQALM)

## Publisher

**Communications and Publications  
Division (CPD) of the IFCC**

The Communications and Publications Division publishes ten editions of the e-News per year, including two double issues.

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## Deadlines for submissions to the eNews

**N° 1/2 – January/February:** *by mid January*

**N° 3 – March:** *by mid February*

**N° 4 – April:** *by mid March*

**N° 5 – May:** *by mid April*

**N° 6 – June:** *by mid May*

**N° 7/8 – July/August:** *by mid June*

**N° 9 – September:** *by mid August*

**N° 10 – October:** *by mid September*

**N° 11 – November:** *by mid October*

**N° 12 – December:** *by mid November*

If you want to submit an article or advertisement to be published in the eNews, send it to:  
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