**10th Beginners' Course in Molecular Diagnostics**

**1st- 6th March, 2020**

**La Paz, Bolivia**

To start with the conclusion of the course - we are more than happy and proud that the 10th Beginners' Course in Molecular Diagnostics could take place and be carried out completely in 2020. Probably this would not have been possible at any earlier and certainly not at any later time and in no case without the support, will and perseverance of all those involved in the organization, to whom we would like to express our sincere thanks.



Each Beginners' Course in Molecular Diagnostics conducted by the Committee on Clinical Molecular Biology Curriculum (C-CMBC) of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) so far has presented the organizing team with new, special challenges, which on the other hand reflects the character of this program. The combination of internationally active tutors, participants who are eager to learn and are enthusiastic about molecular genetics, course venues which are rarely designed for such a course and usually unknown to the organizing team, requires an adaptation of the program to local conditions, making each course unique.

**Who were the organizers and tutors in 2020?**

The 10th Beginners' Course in Molecular Diagnostics took place at Plexus Laboratories from 1st till 6th of March 2020 in La Paz, Bolivia.

This course was locally supported and organized by the Bolivian Society of Clinical Chemistry (SOBOBIOCLI) and the Bolivian Program of Continuous Education (PROBOECO). Personally responsible for this course were **Dr. Alvaro Justiniano Grosz** as President of the Sociedad Boliviana de Bioquímica Clínica and **Dr. Aldo Vacaflores**, General Manager of Plexus Laboratories.

The following IFCC CMBC committee members were responsible for organization and teaching:
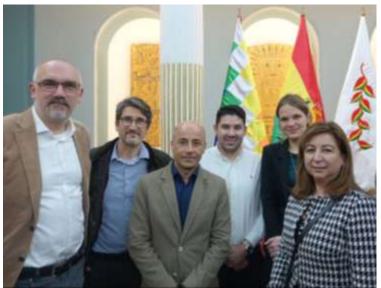
1. **Verena Haselmann**, MD, PhD, Deputy Director, Institute for Clinical Chemistry, University Medicine Mannheim, Medical Faculty Mannheim of the University of Heidelberg, Germany (chair C-CMBC)

2. **Ettore Domenico Capoluongo**, PhD, Professor, Director, Department of Molecular Medicine and Biotechnology, University Federico II, Naples, Italy (member C-CMBC)

3. **Orland Díaz Gibert**, PhD, Professor, Vall d'Hebron Institute of Oncology, Area of Clinical and Molecular Genetics, University Hospital of Vall d'Hebron, Barcelona, Spain (member C-CMBC)

4. **Andrea Ferreira-Gonzalez**, PhD, Professor, Department of Pathology, Virginia Commonwealth University, Richmond, Virginia (consultant C-CMBC)

5. **Parviz Ahmad-Nejad**, PhD, Professor, Director, Institute for Microbiology and Laboratory Medicine, University of Witten/Herdecke, Wuppertal, Germany (chair C-MD committee, C-CMBC supporting tutor)



**From left to right: Prof. Parviz Ahmad-Nejad (Germany), Prof. Orland Díaz Gibert (Spain), Prof. Ettore Capoluongo (Italy), Dr. Aldo Vacaflores (Bolivia), Dr. Verena Haselmann (Germany), Prof. Andrea Ferreira-Gonzales (USA)**

**What was special about this course?**

The 10th IFCC Beginners' course in Molecular Genetics was scheduled to take place as early as 2019, however had to be postponed to 2020 due to the unstable political situation. Since the domestic political situation in Bolivia had stabilized in early 2020, while the situation was unclear in the medium term, the organizers decided to conduct the course on short notice. Accordingly, there were only approximately six weeks for finding a suitable course venue, conducting the pre-course, organizing the transport of the equipment and all consumables, applying for a visa and so on.

Dr. Aldo Vacaflores made his laboratory available to conduct the course and was appointed as trainee by SOBOBIOCLI. As such, he spent one week at the Institute for Clinical Chemistry in Mannheim, Germany to familiarize himself with the schedule, the practical work of the course and to be able to organize everything on site in an optimal way. One of the main issues was the release of the laboratory equipment and the reagents required for the course by the Bolivian customs authorities. With the help of Prof. Maurizio Ferrari, Dr. Alvaro Justiniano Grosz and Richard Freiherr von Rheinbaben (Honorary Consul of Bolivia in Germany) we finally received the release from customs under the condition that everything was transported personally by a member of the IFCC - so this time the "Lab in a suitcase" became a "Lab in many suitcases". Carrying a PCR-cycler in a handbag around the world and explaining the security officers what it is, is definitely a once in a lifetime experience.

Finally, all of us IFCC tutors safely arrived in La Paz as of end of February 2020 and thus shortly before WHO declared CoViD-19 infection as world pandemic. Although we were allowed to conduct the course without any further safety precautions or restrictions, the worldwide health situation kept us busy every day, gave the course special attention and presented us with some difficulties on the return journey. It is worth mentioning that the importance of molecular genetic diagnostics and quality assurance, which are taught during the course, attracted public interest. Thus, Dr. Vacaflores and Dr. Haselmann were invited by breakfast television to give a short interview at the morning television program and the entire tutors and Dr. Vacaflores additionally were allowed to give an interview for a longer report.



"Lab in my suitcases"                    Dr. Haselmann & Dr. Vacaflores at TV

**What was taught and who participated?**

36 students participated in the course. The course was divided into a preliminary course at the first day, which gave a basic introduction to the topic of genetics/nucleic acids, and the actual 5-day Beginners' course in Molecular Diagnostics. Each day consisted of a wet-lab part in the morning, which took place at Plexus Laboratories, and a theoretical part, which was composed of different lectures and in-silico training in the afternoon. Each student additionally received a C-CMBC manual and an accompanying home-work book. The course

was conducted in English, while Prof. Andrea Ferreira-Gonzalez and Prof. Orland Díaz Gibert as native Spanish speaker translated whenever absolutely necessary.

Comparable to former courses, the course started with a blood-draw so that every student could isolate his own genomic DNA. This DNA and additionally prepared characterized patient samples were used for all experiments within the week. The experiments included measuring DNA quantity, gel electrophoresis, simplex-PCR, duplex-PCR, nested-PCR, allel-specific PCR, and RFLP (restriction fragment length polymorphism) analysis for genotyping. Within the lectures, the principle of DNA isolation and quantification, basics of quality assurance and requirements for organizing a genetic laboratory, nomenclature of genetic variants and their annotation, pharmacogenetics, methods used for genotyping, molecular oncology, infectious diseases, qPCR and state-of-the art technologies were addressed and discussed in detail. During the in-silico-training, we focused on nomenclature, PCR-design, RFLP-design as well as on interpretation of direct-sequencing files (abi-files) and medical report writing. Although, the days usually lasted from 9am till 7pm, we had a lot of fun together and were able to spend some time together outside the laboratory.



**Taking blood**                **Lab Day – it is loud**                **… and crowdy**

### How is it going on?

After an exhausting week, we had our final exam on the last day. Everyone was a bit nervous, but all of the students successfully participated. They received a certificate, a USB drive with all results of the course and lectures and before saying "Good bye", we nominated Rodrigo Pessoa Rejas as the next junior member. He will join us for the next course and will help us to improve the course even a bit more.

This course will be remembered by all of us. We learned a lot from each other, made new friends, and had unexpected experiences. So, in the end we are very happy to have conducted such a course in 2020 and we are now looking forward to new applications for next year.



**Final exam**                **Farewell Party**                **Committee & Junior Member**