CDG One-to-One Interviews, a series of interviews with some of the greatest minds influencing and doing breakthroughs in the field of CDG. This is an initiative led by the **Portuguese Association for CDG (www.apcdg.com) and coordinated by** Vanessa Ferreira.

Pf Jaak Jaeken: Lessons from the past, wishes for the future and personal live!
A life dedicated to help patients by solving complex human diseases produced by sugars "antennas".

1 July 2016, By Rita Francisco (**CDG community social manager. Email: sindromecdg@gmail.com**).

Introduction
My name is Rita Francisco, from the Portuguese Association for CDG (APCDG, www.apcdg.com). It is a great honor for me to interview Pf Jaak Jaeken, whose role in the rare disease community, particularly so in the CDG community, has been of paramount importance and filled with continuous discoveries and breakthroughs. Welcome Professor—it is very rewarding for us to you at CDG One-to-One!

Early Days in the CDG world: First reported cases, diagnosis and diagnostics

Rita Francisco: In 1980, you were faced with the challenge of deciphering the clinical condition affecting two twin sisters. What interested you in the case? How did that particular clinical case evolve?
Pf Jaeken: In 1978, I was asked to investigate why these lovely children showed a problem of psychomotor disability. The metabolic screening showed an unusual combination of protein abnormalities in their blood, and I wanted to know the cause of these findings. Looking into the literature, I came across a paper on serum transferrin isoelectrofocusing from a Dutch colleague, and I asked him to perform this analysis in the serum of these siblings. The result was clearly abnormal, and suggested a deficiency of sialic acid on transferrin. This was the real start of the CDG story! In the meantime, the twin sisters have celebrated this year their 40th anniversary! They are always smiling, bringing a message of hope that one day a cure will be found for their disease.

Rita Francisco: Professor, you were also involved in many other CDG-related discoveries. For instance, in 1984 you published a highly reliable and to present day widely used CDG diagnostics test - Isoelectric transferrin focusing. Even so, if you had to select one finding that has had a greater impact on the CDG community, what would it be?
Pf Jaeken: Besides our reports in 1980 (first clinical description of PMM2-CDG, called CDG-Ia at that time) and 1984 (introduction of transferrin isoelectrofocusing as a screening method), the next most important papers were on the discovery of the cause of CDG-Ia, namely phosphomannomutase 2 deficiency, in 1995 together with prof. Emile van Schaftingen and of its genetic defect by prof. Gert Matthijs and his team in 1997.

Rita Francisco: Comparing to those early CDG days, when the first diagnosis and diagnostics tests were being made, what have been the major developments and advances in the field?

Pf Jaeken: The advances in this field have been enormous if you consider that we actually know nearly hundred CDG (discovered in the course of 36 years). This is beyond any expectation! However, this development has been mainly in the diagnostic area and only to a very small extent in the therapeutic area. Indeed, there is a satisfactory treatment for only one CDG (MPI-CDG), and a partial or potential treatment for a few others.

Rita Francisco: During the CDG early days, how were you able to attract and communicate with the scientific community about CDG? And, nowadays, how do you think the scientific community perceives these rare metabolic diseases?

Pf Jaeken: The knowledge about CDG very slowly entered into the scientific community thanks to publications, presentations and workshops by me and others. Nowadays, CDG is well established in the metabolic community. For example, CDG is a separate chapter since many years in the programme of the annual SSIEM meeting in September (the most important metabolic meeting world-wide) while before it was 'buried' in the chapter of carbohydrate diseases.

CDG Nowadays: Genetic discoveries, treatments, therapeutics and accumulated knowledge

It was not until 1997 that Pf Gert Matthjis was able to determine the gene, which caused the disease of the twin sisters – *PMM2*. So, it took 17 years to fully clarify that case. However, CDG has become one of the most rapidly growing group of rare metabolic disorders.

Rita Francisco: Pf Jaeken, what do you think that stimulated this growth on CDG? And, do you think we are close to know all CDGs?
Pf Jaeken: One of the reasons for this rapid growth is the fact that a few strong teams have devoted themselves to the investigation of CDG in all his aspects. In this investigation, the genetic techniques show an increasingly important role (CDG panel analyses, whole exome sequencing and whole genome sequencing). However, the most important reason is that glycosylation comprises a large number of steps with a potential defect in each step. I am convinced that the number of CDG that is still to be discovered is larger than the number of known CDG!

Rita Francisco: Today we are closer to finding effective therapeutics for different CDG subtypes. Do you agree with this statement? What is needed to have more therapies for CDG?
Pf Jaeken: In fact, we face the frustrating situation that the advances in treatment of CDG are stagnating. This is not due to a lack of research at least not with regard to PMM2-CDG, but devising treatments for these diseases is just a formidable challenge (this is not only true for CDG but also for many other metabolic diseases)! On the other hand, companies are of course more interested in designing therapies for frequent diseases than for rare diseases.

Rita Francisco: What are the biggest lessons that CDG have taught to the scientific and medical community?
Pf Jaeken: The existence of these (mostly severe) diseases have taught us that glycosylation is not only extremely important but even an essential process in our body.

Another lesson is that whenever you come across an abnormal result, you should not rest until you have determined the reason behind it.

Work and Personal Life

Rita Francisco: You are officially retired, but dynamically dedicated to CDG. What are your hobbies?
Pf Jaeken: My hobbies are my family and friends, classical music, cycling and … CDG!

Rita Francisco: How did religion influence your personal and professional live?
Pf Jaeken: Religion (I am catholic) is an essential part of my life. The perspective of eternity has profoundly influenced me as a person as well as a professional. For me, science and faith are complementary; they are partners that together give a sense to my life.

Rita Francisco: How did you balanced such an active career with your personal life and what are two of the most memorable family moments?
Pf Jaeken: Finding a balance between my carrier and my family life was never an easy exercise but my wife has always supported me. Unfortunately, she died three years ago. The most memorable family moments were my marriage, the birth of my son, and the birth of my three grandchildren.

When the Master becomes the Apprentice

Rita Francisco: You are a beacon in the CDG community. CDG patients and families are truly inspired by you and learn a lot from you. What have you learnt from them?
Pf Jaeken: I learned a lot particularly from the parents of these children. Their courage, their perseverance, their unconditional affection and love, even in extremely difficult situations, have often deeply touched me. In my life, I have encountered many of these heros!

Rita Francisco: Professor, it has been both a pleasure and a privilege talking to you. You are a remarkable professional and a wonderful human-being. Thank you so much to our readers as well! Keep posted for more CDG One-To-One interviews HERE.

Who is Jaak Jaeken?

The contribution of Prof Jaeken to medicine is exceptional, particularly in the field of metabolic disorders, having made the princeps-description of several metabolic diseases.

In 1980, Prof Jaeken was the first medical doctor to describe a CDG case. Since 1982, Prof Jaeken has consistently occupied several positions at the University of Leuven, from Lecturer to Professor and head of clinic. Since 2006, he has been Emeritus Professor at the Faculty of Medicine. Prof Jaeken is currently on the Editorial Board of The Journal of Inherited Metabolic Disease (since 1994) and of Brain & Development (since 2004). Furthermore, he is a member of numerous committees, societies and councils and he has received many prizes and honours. Prof Jaeken's publication list includes 517 papers, among which are 304 peer reviewed international publications, 2 books, 32 book chapters and a participation as guest editor of 2 special volumes on CDG. He hopes to continue contributing for CDG lives. He is a beacon for the CDG community.

Please read more about Pf Jaeken's role as Advisor at APCDG (http://www.apcdg.com/).