Naples, 11th March 2024

TO: Committee for ESHG Observership for Young Geneticists

RE: Report of my ESHG Observership for Young Geneticists - University Hospital of Lyon, France.

When I applied to ESHG Observership for Young Geneticists, I expected to participate to the day-to-day practice, grand rounds, seminars and other educational activities in my host institute. At the "Hôpital Femme Mère Enfant" (Hospices Civils de Lyon) I found what I was looking for.

In Lyon, the clinical genetics team is composed by 18 medical doctors, 5 genetic counsellors, 4 psychologists, 2 nurses, 5 research assistants and 3 rare diseases network staff members, dealing with patients of all ages (fetuses, children, adults) affected by genetic disorders. Here, thanks to my supervisor Doctor Massimiliano Rossi, I have had the opportunity to observe the genetic diagnostic assessment and counselling of syndromes exhibiting developmental anomalies, including multiple congenital abnormalities and/or intellectual disability syndromes (MCA/ID), skeletal disorders, genetic vascular diseases, neurodegenerative and muscular disorders, genetic epilepsies, cancer hereditary predispositions. I also attended foetal autopsies with foetopathologists.

Moreover, beyond genetic diagnosis and counselling, I have been involved in: i) patients' multidisciplinary follow-up, including multidisciplinary meetings and consultations; ii) patients' Therapeutic Educational programs for MCA/ID syndromes; iii) clinical and therapeutic trials, especially for skeletal disorders and genetic vascular diseases; iv) precise targeted therapies for achondroplasia in a routine setting. I have learnt of the third French National Rare Diseases Plan as well as the French National Plan for Genomic Medicine 2025.

Furthermore, I also followed the activities of the genetic laboratory including cytogenetics (karyotype, FISH, array-CGH) and the interpretations of the results of the whole genome sequencing analyses performed by the national genomic platform AURAGEN, based in Lyon.

I have written as first name: i) a chapter of a neurosurgeon book (*What to ask to the geneticist in craniosynostosis?* – Springer nature, in press) ii) a review article (*Punctuated chondrodysplasia: deficiency of cholesterol biosynthesis and deficiency of arylsulfatase L* – in progress). I will present a poster of a clinical case seen in Lyon at EuroNDD of Lisbon in Avril (*Clinical and molecular characterization of a patient presenting with neurodevelopmental disorder and multiple congenital abnormalities, carrying homozygous pathogenic variant in GZF1*) and, finally, I am involved in two collaborative ongoing research studies about Williams-Beuren Syndrome.

I have also attended local and national meetings: i) the *12th Assises de Génétique Humaine et Médicale 2024*, the bi-annual international meeting of francophone genetics, in Paris; ii) *LyOscar*, a regional meeting on skeletal dysplasias and calcium metabolism disorders, in Lyon.

In conclusion, these activities have helped me to improve my clinical skills, to learn about the application of advanced molecular diagnostics in genetics and start setting up collaborations that will help me during my career.

I am very grateful to ESHG for this experience, and I thank Prof. Nicola Brunetti-Pierri for encouraging me to start this experience and Dott. Massimiliano Rossi for his warm and tailored organisation of my Observership.

Sincerely
Dr. Alessandro De Falco