

Prof. Dr. Alessandro Prigione received an MD from the University of Milan Italy in 2002 and a PhD from the San Raffaele University in Italy in 2008. During his training, he worked on neurological disease at University of Milan-Bicocca Italy, mitochondrial diseases at University California Davis (UCD) USA, mouse induced pluripotent stem cells (iPSCs) at San Raffaele Scientific Institute in Milan Italy, and human iPSCs at the Max Planck Institute in Berlin Germany. From 2014 to 2019 he was Delbrück Fellow at the Max Delbrueck Center for Molecular Medicine (MDC) in Berlin Germany. In 2019, he moved to Heinrich Heine University (HHU) in Düsseldorf Germany, where he was appointed as tenured Associate Professor of Pediatric Metabolic Medicine in the Department of General Pediatrics.

The interest of the Prigione group is to develop iPSC-driven approaches for disease modeling and drug discovery of rare incurable neurological and neurodevelopmental disorders affecting mitochondrial metabolism. A specific focus is on Leigh syndrome, which is the most severe mitochondrial disease affecting children. Using neurons and brain organoids from patients with Leigh syndrome, they are dissecting the neuronal-specific disease mechanisms in order to identify targets on interventions. The lab applies genome editing technologies to nuclear and mitochondrial genome to develop engineered disease models. They employ the models to perform compound screenings using high-content imaging approaches. A repurposable drug identified by the Prigione group following this iPSC-based approach has recently received the designation of Orphan Drug label from the European Medicines Agency (EMA) for the treatment of Leigh syndrome, and for this a clinical trial is now under development.