Chukwuemeka George O. Anene-Nzelu

Cardiovascular Research Institute (CVRI) Singapore

« The non-coding genome in the regulation of cardiac disease »

The human heart is the first organ to function during embryogenesis and is prone to malformations, making congenital heart disease the most common congenital anomaly in newborn babies. Similarly, Heart failure (HF) is a major public health concern being a leading cause of morbidity and mortality and posing an ever-growing economic burden to ageing populations and healthcare systems worldwide. HF represents the final common pathway of diseases arising from diverse initiating causes, including coronary artery disease, metabolic disease, hypertension, and others. At a molecular level, heart failure is characterized by a unifying myocardial stress-gene response where regardless of the initiating cause, the failing heart manifests a consistent gene expression pattern. This HF gene-expression signature implies that common regulatory pathways exist that mediate disease onset and progression. Here, we investigate the role of the non-coding genome, particularly the 3D chromatin architecture in regulating the gene expression changes observed in heart disease.