CENTER for MITOCHONDRIAL and EPIGENOMIC MEDICINE

DOUGLAS C. WALLACE, PH.D. - DIRECTOR

VISION

Our Center is founded on the premise that systemic mitochondrial energy deficiency, not organ-specific structural defects, underlies most metabolic and degenerative diseases, cancer, and aging. This transformative idea suggests powerful new approaches for diagnosis and treatment of both rare and common diseases.

MISSION

The mission of the Center for Mitochondrial & Epigenomic Medicine (CMEM) is to unite the biomedical scientists, clinicians, and patients and their families within The Children's Hospital of Philadelphia and University of Pennsylvania Perelman School of Medicine to determine the causes and generate the cures for metabolic and degenerative diseases, cancer, and aging. To achieve this ambitious goal, the Center is applying a new biomedical paradigm which posits that most "complex" diseases result from perturbations in the mitochondrial and cellular energy generating systems rather than from organ-specific structural defects. These bioenergetic defects may result from mutations in the mitochondrial DNA or nuclear DNA, alterations in gene expression (epigenomics), or from environmental insults. Because energy is required by every cell, tissue and organ in the body, CMEM is applying this paradigm to metabolic diseases such as diabetes, obesity, and cardiovascular disease; degenerative diseases such as autism, Down Syndrome, Leigh Syndrome, Alzheimer Disease, Parkinson Disease, forms of deafness and blindness, multiple sclerosis, heart disease, and renal failure; a variety of forms of cancer including prostate, breast, colorectal; and aging which will ultimately affect everyone. Therefore, CMEM's work will contribute to the health and wellbeing of all people: embryos, fetuses, children, adults, and elders.