

## Independent regulation of nuclear versus cytosolic calcium

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Cytosolic  $\text{Ca}^{2+}$  regulates a wide range of cell functions in virtually every type of cell, from secretion to metabolism to cell growth and death 1,5,6. It is unknown how  $\text{Ca}^{2+}$  can simultaneously regulate such diverse activities in an individual cell, although  $\text{Ca}^{2+}$  waves and other types of  $\text{Ca}^{2+}$  gradients may be responsible by allowing distinct  $\text{Ca}^{2+}$  signals to occur in different subcellular regions. In the nucleus calcium has local effects that are distinct from those of calcium increases in the cytoplasm. Dr. Leite and her colleagues have been working to define the structural and functional features that enable calcium signaling within the nucleus to be regulated. For example, this group has identified a reticular network of nuclear calcium stores that can independently regulate calcium release within the nucleus. Dr. Leite will discuss some of the features of these calcium stores, plus the factors that regulate calcium release within the nucleus, and some of the downstream cell and molecular effects that result from increases in calcium within the nucleus in particular