CARL L. SCHILDKRAUT, Ph.D.

Positions:

Professor, Department of Cell Biology, Albert Einstein College of Medicine

Research interests:

At least 40 neuromuscular diseases are caused by expansion of triplet repeats. One of these is the Fragile X syndrome, which is the most commonly inherited form of mental retardation. We are studying the mechanism of expansion of the FRAX triplet repeats in embryonic stem cell lines derived from women who carry the FRA gene. We are also studying, in iPS cells, the mechanism of expansion of other triplet repeats such as the one resulting in Friedreich's ataxia. Telomere length plays an essential role in aging. We are studying how telomeres replicate in human and mouse cells. We are asking whether, under stress, initiation of replication is forced to occur more frequently in the telomere-repeated sequence.

Current grant funding:

2 R01 GM 045751-21 (Schildkraut) NIH/GM	12/01/2012–11/30/2016 DNA replication initiation sites in mammalian cells
1 R01 GM 083185-03 (Borowiec) NIH/GM	03/01/2010–02/28/2013 Regulation of RPA activity in DNA repair
CO24348 (Schildkraut) NYSTEM	01/01/2009–12/31/2012 Differential regulation of DNA replication

Five recent publications:

1. Drosopoulos WC, Kosiyatrakul S, Yan Z, Calderano SG, Schildkraut CL. Human telomeres replicate using chromosome-specific, rather than universal, replication programs. ***J. Cell Biol.*** 2012, 197:253–66. PubMed PMID:22508510.
2. Schultz SS, Desbordes, SC, Du Z, Kosiyatrakul S, Lipchina I, Studer L, Schildkraut CL. Single molecule analysis reveals changes in the DNA replication program for the POU5F1 Locus Upon hESC Differentiation. ***Mol. Cell. Biol.*** 2010, 18:4521–34. PubMed PMID:20647538.
3. Sfeir A, Kosiyatrakul ST, Hockemeyer D, MacRae SL, Karlseder J, Schildkraut CL, De Lange T, Mammalian telomeres resemble fragile sites and require TRF1 for efficient replication. ***Cell*** 2009, 138:90–103. PubMed PMID:19596237.
4. Desprat R, Thierry-Mieg D, Lailler N, Schildkraut CL, Thierry-Mieg J, Bouhassira EE. Predictable dynamic program of timing of DNA peplication in human cells. ***Genome Res.*** 2009, 19:2288–99 PubMed PMID:19767418.
5. Guan Z, Hughes CM, Kosiyatrakul ST, Norio P, Sen R, Fiering S, Allis CD, Bouhassira EE, Schildkraut CL. Decreased replication origin activity in temporal transition regions. ***J. of Cell Biol.*** 2009, 187:623–35. PubMed PMID:19951913.