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**EMBARGOED UNTIL 4:00am U.S. EASTERN TIME, April 24, 2012 (*Molecular Psychiatry*)**

**TITLE:** *Exposure to Violence During Childhood is Associated with Telomere Erosion from 5 to 10 Years of Age: A Longitudinal Study*

An international research team led by Idan Shalev, Avshalom Caspi and Terrie Moffitt at Duke University and King's College London reports that the DNA of 10-year-olds who have experienced violence in their young lives already shows wear and tear that is normally associated with aging.

**PUBLICATION SOURCE:** *Molecular Psychiatry*, to appear on April 24, 2012.

**THE FINDINGS:**

Telomeres are special DNA sequences found at the tips of our chromosomes; much like the plastic tips of shoelaces, they prevent our DNA from unraveling. Telomeres get shorter each time cells divide. That erosion places a limit on the length of time that a given cell can go on dividing. Emerging evidence suggests that telomeres are "master integrators," connecting stress to biological age and associated diseases. We showed, for the first time, that cumulative violence exposure is associated with accelerated telomere erosion, from age 5 to age 10 years, among children who experienced violence at a young age (e.g., domestic violence, frequent bullying or physical maltreatment by an adult). Children who were exposed to multiple forms of violence had the fastest telomere erosion rate. This finding was not affected by the child's gender, socioeconomic deprivation, weight or health.

**WHY ARE THESE FINDINGS IMPORTANT?**

Research has shown that children who experience severe stress grow up to have many physical health problems as adults. But how does this happen? What is the mechanism? Our findings provide support for a possible mechanism linking childhood stress to accelerated aging, even at a young age at the fundamental level of our cells. In other words, children who experience violence appear to be aging at a faster rate. This finding suggests the importance of including telomeres as stress markers in research to evaluate the effects of stress. It also suggests new urgency for preventing harm to

children.

### **SUPPORTING DETAILS:**

Telomere length: DNA samples were collected from children when they were 5 years old and then at 10 years. We measured the mean telomere length across all chromosomes at both time-points.

Exposure to violence: We assessed three kinds of violence experiences between ages 5-10 years: exposure to domestic violence between the mother and her partner; frequent bullying victimization; and physical maltreatment by an adult. We interviewed the twins' mothers when the children were 5, 7, and 10 years of age and compiled a cumulative record of each child's exposure to violence.

### **PARTICIPANTS:**

Participants were 236 members of the Environmental-Risk (E-Risk) Study, which tracks the development of a birth cohort of 2,232 children born in 1994-1995 in England and Wales. This birth cohort's families represent the full range of socioeconomic status and health in the general population. Follow-ups have been carried out at ages 5, 7, 10 and most recently at age 12 years, when 96% of the living cohort members took part. We examined a subsample of 236 children of the E-Risk for this study, 42% of whom had experienced violence.

### **MEDIA CONTACTS:**

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### **UNIVERSITIES INVOLVED:**

(1) Duke University, Durham, NC, 27708, USA.

(2) MRC Social, Genetic, and Developmental Psychiatry Centre, King's College London, Institute of Psychiatry Box PO80, SE5 8AF, UK.

The study protocol was approved by the UK Multicentre Research Ethics Committee and university ethics review board. Parents and children gave informed consent for the research. Children in danger were referred for help by the investigators.

**MAIN FUNDING SOURCES:**

1. The U.K. Medical Research Council
2. The U.S. NICHD
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