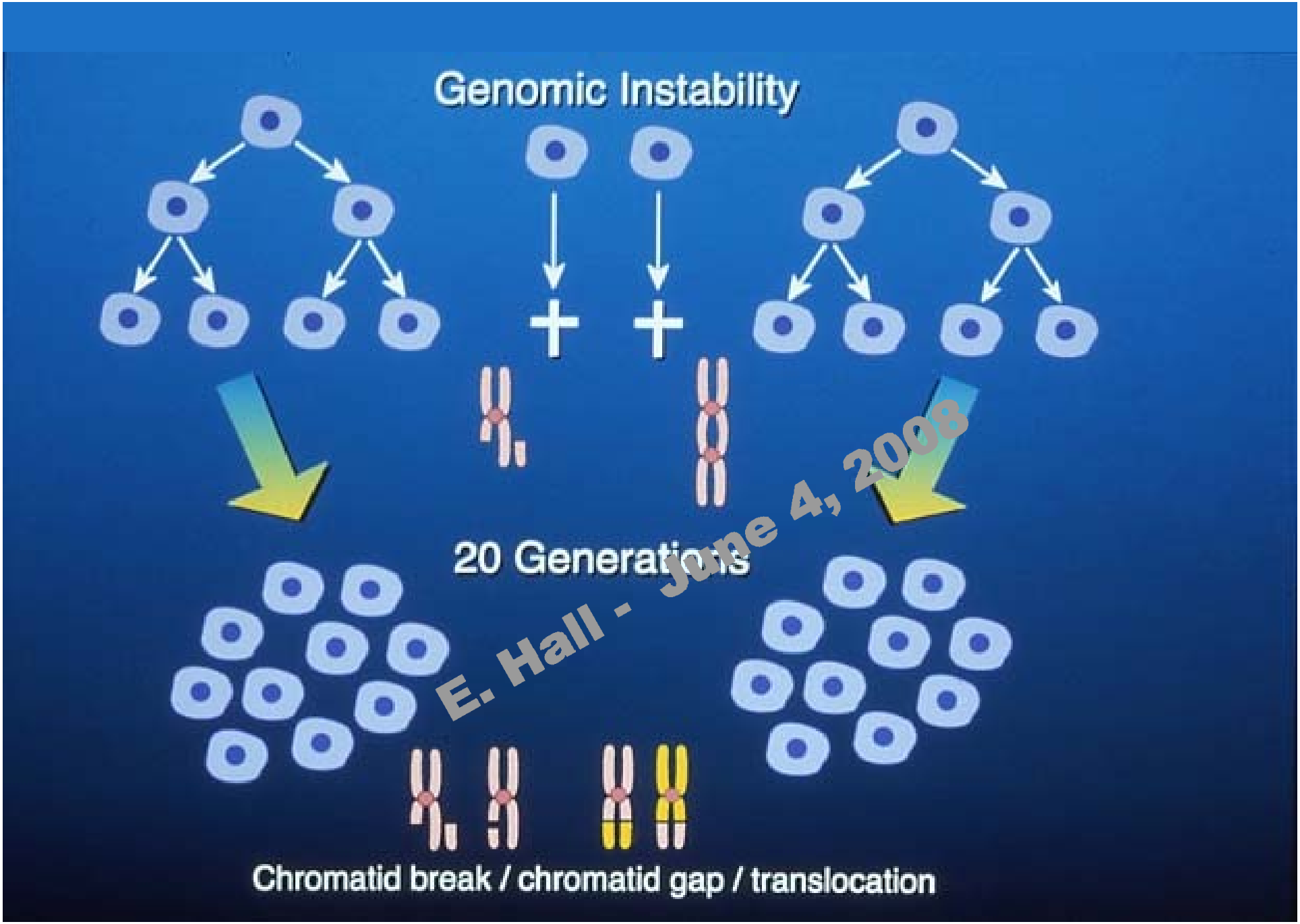
The Annual NASA Space Radiation Summer School
2010 Slide Competition
For The Health Risks of Extraterrestrial Environments (THREE)

Second Place

Manuela Buonnano
University of Medicine and Dentistry of New Jersey

Submission on
Genomic Instability
from
Eric Hall (2008)
Cellular Radiobiology: Biological Responses to High LET Radiation

NASA Space Radiation Summer School


Genomic Instability
20 Generations
E. Hall - June 4, 2008
Chromatid break / chromatid gap / translocation

Ionizing radiation may destabilize the genome and induce a cascade of genomic events that increases the rate of *de novo* mutations and chromosomal alterations in the progeny of irradiated cells.

One aspect of genomic instability induced by high LET radiation is gene amplification which is frequently observed in tumors and transformed cell lines.

Although the molecular events leading to gene amplification are not known, experimental evidence suggests that chromosomal breakage followed by formation of acentric fragments that harbor the target gene may play a role.

Morgan, W.F. *Radiat. Res.* 2003 May;159(5):567-80.

Windle, B.E. and Wahl ,G.M., *Mutat. Res*. 1992 May; 276(3):199-224.

Hall, E.J. and Hei T.K., *Oncogene* (2003) 22, 7034-7042.