

HeLa Cells Exhibit Power Function Growth Characteristic

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Connexins (Cx), a diverse protein family responsible for forming gap junctions that mediate direct intercellular communication between most cells in vertebrate species. Among their many functions that include electrical coupling, homeostasis and intercellular signaling, gap junctions have also been implicated in tumor-suppression (1-6). Previous studies suggest that HeLa cells transfected with Cx26 (one member of the connexin family) display reduced growth, but cells transfected with Cx43 do not show significantly reduced growth (4). My finding contradicts these findings by Mesnil, et al (4). One Cx43 transfected clone (43A) clone demonstrated similar growth characteristic to a Cx26C transfected clone (26C) when grown in vitro in Dubelcco's Modified Eagle Medium (Gibco, CA) with 1% fetal bovine serum (FBS) (Gibco, CA).

Tumor cell growth is commonly believed to exhibit an exponential growth, but the exponential growth theory is flawed by non-constant doubling time and linearization graph (7-9). The Gompertzian model aims to fix these flaws, but is flawed in itself by ambiguous parameters (9). Using growth data of HeLa parental cells and 26C and 43A transfectants in 1% FBS, along with growth data of HeLa parental and 26C cells in 10% FBS, I was able to derive a simple and clear mathematical model to accurately predict the growth of these cells up to saturation.

References

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