COMMENTARY

# A sample article title

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**Abstract**

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## Content

Text and results for this section, as per the individual journal's instructions for authors.

## Section title

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*Sub-sub-sub heading for section* Text for this sub-sub-sub-heading ... In this section we examine the growth rate of the mean of $Z_0$, $Z_1$ and $Z_2$. In addition, we examine a common modeling assumption and note the importance of considering the tails of the extinction time $T_x$ in studies of escape dynamics. We will first consider the expected resistant population at $vT_x$ for some $v > 0$, (and temporarily assume $\alpha = 0$)

$$E\big[Z_1(vT_x)\big] = E\bigg[\mu T_x \int_0^{v\wedge 1} Z_0(uT_x)\exp\big(\lambda_1 T_x(v-u)\big)\,du\bigg].$$

If we assume that sensitive cells follow a deterministic decay $Z_0(t) = xe^{\lambda_0 t}$ and approximate their extinction time as $T_x \approx -\frac{1}{\lambda_0}\log x$, then we can heuristically estimate the expected value as

$$\begin{aligned} E\big[Z_1(vT_x)\big] &= \frac{\mu}{r}\log x \int_0^{v\wedge 1} x^{1-u}x^{(\lambda_1/r)(v-u)}\,du \\ &= \frac{\mu}{r}x^{1-\lambda_1/\lambda_0 v}\log x \int_0^{v\wedge 1} x^{-u(1+\lambda_1/r)}\,du \\ &= \frac{\mu}{\lambda_1-\lambda_0}x^{1+\lambda_1/rv}\bigg(1-\exp\bigg[-(v\wedge 1)\bigg(1+\frac{\lambda_1}{r}\bigg)\log x\bigg]\bigg). \quad (1) \end{aligned}$$

Thus we observe that this expected value is finite for all $v > 0$ (also see [1, 2, 3, 4, 5]).

**Competing interests**
The authors declare that they have no competing interests.

**Author's contributions**
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**References**
1. Koonin, E.V., Altschul, S.F., Bork, P.: Brca1 protein products: functional motifs. Nat Genet **13**, 266–267 (1996)
2. Kharitonov, S.A., Barnes, P.J.: Clinical Aspects of Exhaled Nitric Oxide. in press
3. Zvaifler, N.J., Burger, J.A., Marinova-Mutafchieva, L., Taylor, P., Maini, R.N.: Mesenchymal cells, stromal derived factor-1 and rheumatoid arthritis [abstract]. Arthritis Rheum **42**, 250 (1999)
4. Jones, X.: Zeolites and synthetic mechanisms. In: Smith, Y. (ed.) Proceedings of the First National Conference on Porous Sieves: 27-30 June 1996; Baltimore, pp. 16–27 (1996). Stoneham: Butterworth-Heinemann
5. Margulis, L.: Origin of Eukaryotic Cells. Yale University Press, New Haven (1970)

**Figures**

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**Tables**

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