# **RESEARCH**

# A sample article title

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### **Abstract**

**First part title:** Text for this section. **Second part title:** Text for this section.

Keywords: sample; article; author

## Content

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

## Section title

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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  $\alpha = 0$ )

$$E[Z_1(vT_x)] = \int_0^{v \wedge 1} Z_0(uT_x) \exp(\lambda_1) du.$$

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

$$E[Z_1(vT_x)]$$

$$= \frac{\mu}{r} \log x \int_0^{v \wedge 1} x^{1-u} x^{(\lambda_1/r)(v-u)} du.$$
(1)

Thus we observe that this expected value is finite for all v > 0 (also see [1, 2, 3, 4, 5, 6]).

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# **Appendix**

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### Acknowledgements

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#### **Funding**

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#### **Abbreviations**

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### Availability of data and materials

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#### Ethics approval and consent to participate

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#### Competing interests

The authors declare that they have no competing interests.

#### Consent for publication

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#### Authors' contributions

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## **Figures**

Figure 1 Sample figure title

Figure 2 Sample figure title

## Tables

 $\textbf{Table 1} \ \, \textbf{Sample table title. This is where the description of the table should go}$ 

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A2			
A3			

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Additional file 1 — Sample additional file title

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