RESEARCH

Methods to compute the composite log-likelihood (CLL) of allelic frequencies for the detection of signatures of selection in diploid genomes

Filippo Biscarini[1*], Nelson Nazzicari[1] and Alessandra Stella[1]

*Correspondence:
filippo.biscarini@tecnoparco.org
[1]Department of Bioinformatics,
PTP, Via Einstein - Loc. Cascina
Codazza, Lodi, Italy
Full list of author information is
available at the end of the article
[†]Equal contributor

Abstract

First part title: Text for this section.

Second part title: Text for this section.

Keywords: composite log-likelihood; signatures of selection; diploid genomes

Background

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

Section title

Text for this section ...

Sub-heading for section

Text for this sub-heading ...

Sub-sub heading for section

Text for this sub-sub-heading ...

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

$$E\big[Z_1(vT_x)\big] \quad = \quad \frac{\mu}{r} \log x \int_0^{v \wedge 1} x^{1-u} x^{(\lambda_1/r)(v-u)}\, du$$

$$= \frac{\mu}{r} x^{1-\lambda_1/\lambda_0 v} \log x \int_0^{v \wedge 1} x^{-u(1+\lambda_1/r)} \, du$$

$$= \frac{\mu}{\lambda_1 - \lambda_0} x^{1+\lambda_1/rv} \left(1 - \exp\left[-(v \wedge 1)\left(1 + \frac{\lambda_1}{r}\right) \log x \right] \right). \quad (1)$$

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
Text for this section . . .

Author details
[1]Department of Bioinformatics, PTP, Via Einstein - Loc. Cascina Codazza, Lodi, Italy. [2]Marine Ecology Department, Institute of Marine Sciences Kiel, Düsternbrooker Weg 20, 24105 Kiel, Germany.

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

Figure 1 Sample figure title. A short description of the figure content should go here.

Figure 2 Sample figure title. Figure legend text.

Tables

Table 1 Sample table title. This is where the description of the table should go.

	B1	B2	B3
A1	0.1	0.2	0.3
A2	...	..	.
A3	..	.	.

Additional Files
Additional file 1 — Sample additional file title
Additional file descriptions text (including details of how to view the file, if it is in a non-standard format or the file extension). This might refer to a multi-page table or a figure.

Additional file 2 — Sample additional file title
Additional file descriptions text.