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Erratum to: General continuous-time Markov model of sequence evolution via insertions/deletions: are alignment probabilities factorable?

Kiyoshi Ezawa[1,2]

Update as of 7th April 2017: Since initial publication of this Erratum on 10th November 2016, its xml contained some errors that were not in the pdf. Now, in this republished version, these errors have been corrected.

Erratum

Unfortunately, [1] was published with errors in the equations and text. Please find further details below.

In the following sentences '$\check{s}^{II}$' should be capitalised to be '$\check{S}^{II}$': 'Because of the rules imposed above, the space of the extended sequence states (denoted as $\check{s}^{II}$ in [31]) is included in but never equal to $\{\Upsilon\times\Omega\}^* = \cup_{L=0}^{\infty}\{\Upsilon\times\Omega\}^{L}$' (the last sentence of the first paragraph of section R2) and 'Because the state space we are working in, $\check{s}^{II}$, is essentially infinite, we cannot give the explicit matrix expression of the rate operator on the entire state space. Nevertheless, the rate operator can be defined if we give its action on every state in $\check{s}^{II}$' (the two sentences above Eq.(R3.1)).

Therefore the correct sentences are: 'Because of the rules imposed above, the space of the extended sequence states (denoted as $\check{S}^{II}$ in [31]) is included in but never equal to $\{\Upsilon\times\Omega\}^* = \cup_{L=0}^{\infty}\{\Upsilon\times\Omega\}^{L}$' and 'Because the state space we are working in, $\check{S}^{II}$, is essentially infinite, we cannot give the explicit matrix expression of the rate operator on the entire state space. Nevertheless, the rate operator can be defined if we give its action on every state in $\check{S}^{II}$.'

In Equation (R4.6) below, there should only be one comma after '$[\widehat{M}_1, \widehat{M}_2, , , \ldots, \widehat{M}_N]$'.

$$\langle s_0 | \widehat{P}^{ID}(t_I, t_F) = \sum_{N=0}^{\infty} \sum_{[\widehat{M}_1, \widehat{M}_2, , , \ldots, \widehat{M}_N] \in H^{ID}(N; s_0)} P[([\widehat{M}_1, \widehat{M}_2, , , \ldots, \widehat{M}_N] , ,, [t_I, t_F]) | s_0, t_I] \langle s_0 | \widehat{M}_1 \widehat{M}_2 \ldots \widehat{M}_N.$$

Besides, the triple commas in the expression, '$[\widehat{M}_1, \widehat{M}_2, , , \ldots, \widehat{M}_N]$', should also be a single comma.

Therefore the correct equation is as below:

$$\langle s_0 | \widehat{P}^{ID}(t_I, t_F) = \sum_{N=0}^{\infty} \sum_{[\widehat{M}_1, \widehat{M}_2, \ldots, \widehat{M}_N] \in H^{ID}(N; s_0)} P[([\widehat{M}_1, \widehat{M}_2, \ldots, \widehat{M}_N], [t_I, t_F]) | (s_0, t_I)] \langle s_0 | \widehat{M}_1 \widehat{M}_2 \ldots \widehat{M}_N.$$

In Equation (R5.4) below, the 'K' in front of the 'N_1' should be a '1'

$$\langle s^D | = \langle s^A | [\widehat{M}[K,1] \ldots \widehat{M}[K,N_K]] \ldots [\widehat{M}[1,1] \ldots \widehat{M}[K,N_1]].$$

Therefore the correct equation is as below:

$$\langle s^D | = \langle s^A | [\widehat{M}[K,1] \ldots \widehat{M}[K,N_K]] \ldots [\widehat{M}[1,1] \ldots \widehat{M}[1,N_1]].$$

In Equation (R6.4) below, two of the square brackets should be round parentheses:

$$\mu_P\left[\left(\left[\vec{\widehat{M}}\right]_{LHS}, [t_I, t_F]\right) | (s^A, t_I)\right] \equiv P\left[\left(\left[\vec{\widehat{M}}\right]_{LHS}, [t_I, t_F]\right) | (s^A, t_I)\right] / P[[[], [t_I, t_F]] | (s^A, t_I)],$$

Therefore the correct equation is as below:

$$\mu_P\left[\left(\left[\vec{\widehat{M}}\right]_{LHS}, [t_I, t_F]\right) | (s^A, t_I)\right] \equiv P\left[\left(\left[\vec{\widehat{M}}\right]_{LHS}, [t_I, t_F]\right) | (s^A, t_I)\right] / P[([], [t_I, t_F]) | (s^A, t_I)],$$

Correspondence: kezawa.ezawa3@gmail.com; kezawa@bio.kyutech.ac.jp
[1]Department of Bioscience and Bioinformatics, Kyushu Institute of Technology, Iizuka 820-8502, Japan
[2]Department of Biology and Biochemistry, University of Houston, Houston, TX 77204-5001, USA

In Equation (R7.7) below, the part of the equation starting with theta (i.e.,'Θ_{ID} (b)') should have been subscript text:

$$P\left[\left(\alpha\left(s^A(b), s^D(b)\right), b\right) \middle| \left(s^A(b), n^A(b)\right)\right]$$
$$\equiv P\left[\left(\alpha\left(s^A(b), s^D(b)\right), \left[t\left(n^A(b)\right), t\left(n^D(b)\right)\right]\right) \middle| \left(s^A(b), t\left(n^A(b)\right)\right)\right] |\Theta_{ID}(b)$$

Therefore the correct equation is as below:

$$P\left[\left(\alpha\left(s^A(b), s^D(b)\right), b\right) \middle| \left(s^A(b), n^A(b)\right)\right]$$
$$\equiv P\left[\left(\alpha\left(s^A(b), s^D(b)\right), \left[t\left(n^A(b)\right), t\left(n^D(b)\right)\right]\right) \middle| \left(s^A(b), t\left(n^A(b)\right)\right)\right] |_{\Theta_{ID}(b)}$$

In Equation (R8-2.4) below, the triple commas should be single commas:

$$\delta\delta R_X^{ID}(s''', s'', s', , , s, t) \equiv \delta R_X^{ID}(s''', s'', , , t) - \delta R_X^{ID}(s', s, t),$$

Therefore correct equation is as below

$$\delta\delta R_X^{ID}(s''', s'', s', s, t) \equiv \delta R_X^{ID}(s''', s'', t) - \delta R_X^{ID}(s', s, t),$$

Finally, the manuscript referred to as "Ezawa, unpublished" in [1] has already been published [2].

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Reference

1. Ezawa K. General continuous-time Markov model of sequence evolution via insertions/deletions: are alignment probabilities factorable? BMC Bioinf. 2016;17:304.
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