ERRATA FOR
PHYLOGENETICS

Corrections marked with $*$ are also necessary for books resulting from the second printing (May 2003).

Many thanks to Lars Christensen, Tanja Gernhard, Stefan Grünewald, Peter Humphries, Shlomo Moran, John Rhodes, and Yun Song for their corrections.

- **p. 21 l.-6*:** Replace "$\frac{1}{2}$" by "δ". In the subsequent line, replace "The factor of $\frac{1}{2}$ appears as ... is irrelvant." by "and $\delta = 1$ unless $2i = n$, in which case $\delta = \frac{1}{2}$ for then the order of X_1 and X_2 is irrelevant."

- **p.35 l.-4*:** Insert "of" immediately after "a collection $\{\mathcal{T}_1, \mathcal{T}_2, \ldots, \mathcal{T}_k\}$".

- **p.39*:** The right-hand-side of (2.7) should be multiplied by $|E_1|$.

- **p.40 l.9*:** It should be "with kernel T_1'."

- **p.46*:** In Example 3.1.8, the two references to "Fig. 3.1" should be to "Fig. 3.3."

- **p.55 l.3:** Change "$1 \leq i \leq j \leq n$" to "$1 \leq i \leq j \leq n-1$".

- **p.66*:** In Example 4.1.2, if $t = \epsilon$, then $\bar{\chi}_t$ also satisfies (C1) and (C2). Consequently, in line 3, insert ϵ in the set $\{\alpha, \beta, \delta\}$ and, in line 5, insert ϵ in the set $\{\beta, \delta\}$. Also change line 6 by replacing "and $\bar{\chi}_\delta$" with "$\bar{\chi}_\delta$, and $\bar{\chi}_\epsilon$".

- **p.68 l.1*:** Insert "disjoint" between "are" and "paths".

- **p.72 l.15*:** "Lastly, to obtained" should read "Lastly, to obtain"

- **p.73*:** In the proof of Corollary 4.2.6 (line 9): Replace "Assume $A \cap B$ is empty. Now," by: "Assume $A \cap B$ is empty. If $A = X - B$, then the claim also clearly holds, so we may suppose that".

- **p.81 l.-1:** Change the end of the last sentence to "in particular, $\mathcal{C}$ phylogenetically defines $\mathcal{T}$." In other words, add the word "phylogenetically" before the second "defines".

- **p.91 l.-7*:** Replace "$\overline{g} \circ \phi(x) \in \chi(x)$" with "$\overline{g} \circ \phi(x) \in g(x)$".

- **p.98 l.-12:** Add "(1995)" immediately after "Bandelt *et al.*"

- **p.112 l.17*:** "$\binom{4}{2}^{|Y|}$" should be "$\binom{4}{2}^{|V'|}$"

- **p.114 l.2:** Insert "$\mathcal{T}$ displays $\mathcal{P}$ and" between "if" and "every X-tree".

- **p.114 l.8*:** Add a full stop after "co$(P) = T$".

- **p.117 l.-8*:** Delete the "}" before the colon.

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p.117*: Theorem 6.3.9 is incorrect as stated, but does hold if $\mathcal{T}$ is binary. A corrected form of Theorem 6.3.9 and the appropriate citation is given below.

For a phylogenetic tree $\mathcal{T}$, let $\mathring{E}(\mathcal{T})$ denote the set of interior edges of $\mathcal{T}$ and let $d(u)$ denote the degree of a vertex u of $\mathcal{T}$. Let $q(\mathcal{T})$ denote the size of a minimum-sized set of quartets that identifies $\mathcal{T}$.

Theorem 6.3.9. Let $\mathcal{T}$ be a phylogenetic X-tree and let $\mathcal{Q}$ be a collection of quartets that identifies $\mathcal{T}$. Then, for each interior edge $e = uv$ of $\mathcal{T}$ with $d(u) \le d(v)$, the collection $\mathcal{Q}$ contains at least $q(d(u)-1, d(v)-1)$ quartets that distinguish e, where

$$q(r, s) = \left\lceil \frac{r(s-1)}{2} \right\rceil$$

for all $r, s \ge 2$. In particular,

$$|\mathcal{Q}| \ge \sum_{uv \in \mathring{E}(\mathcal{T})} q(d(u) - 1, d(v) - 1).$$

Moreover, there exists a collection of quartets that identifies $\mathcal{T}$ and has size

$$q(\mathcal{T}) = \sum_{uv \in \mathring{E}(\mathcal{T})} q(d(u) - 1, d(v) - 1).$$

Grünewald S., Humphries, P. J., and Semple, C. Quartet compatibility and the quartet graph, submitted.

p.122 l.7: Replace "Fig. 6.5" with "Fig. 6.10".

p.134 l.1,3: Change "Corollary 6.8.9(b)" to "Corollary 6.8.9(ii)".

p.137 l.3: "$\operatorname{exc}(\mathcal{Q}_1 \cup \mathcal{Q}_2) = 0$"

p.142: At the start of Exercise 12, replace "(Semple 2002)" with "(Semple 2003)".

p.142*: In Exercise 7, add the condition that $\mathcal{T}$ is binary.

p.153 l.14: $\delta(x,y) = \delta(r,x) + \delta(r,y) + 2d_{(\mathcal{T}';w')}(x,y) = d_{(\mathcal{T};w)}(x,y)$

p.159 l.-15: Change "Denis and Gascuel (2002)" to "Denis and Gascuel (2003)"

p.174 l.18*: Delete "be" between "distance" and "between".

p.184 l.-7*: Replace "$\det(P) = 1$" with "$|\det(P)| = 1$".

p.190 l.-3*: Replace "$\phi(x) \le_T v$" with "$v \le_T \phi(x)$".

p.191 l.-11*: "the requirement than" should be "the requirement that"
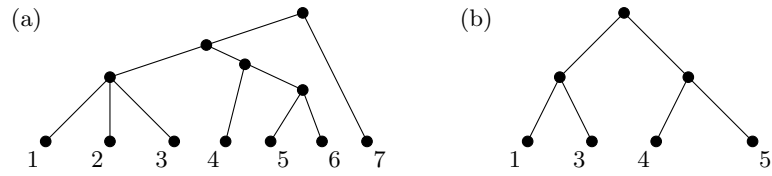
p.196 l.-9*: Replace "$P(e)_{\alpha\beta} = p_\infty$" with "$P(e)_{\alpha\beta} = p_\beta$".

p.199*: There is a typo in the formula for "H^{-1}". It should read "$H^{-1} = (1/k)H^t$" and not "$(1/k)H$".

p.201*: There is a right bracket missing in the first formula (i) in Lemma 8.6.5.

p.217*: In Exercise 11, the last equation should be "$\langle \overline{p}, \overline{p}' \rangle = \overline{p_\emptyset}(\gamma + \gamma')$"

Fig. 6.2: Replace Fig. 6.2 with the following figure.

(a)

(b)

In addition to these, two 'in press' references need to be updated:

(1) Denis, F. and Gascuel, O. (2003). On the consistency of the minimum evolution principle of phylogenetic inference. *Discrete Applied Mathematics*, **127**, 63-77.

(2) Semple, C. (2003). Reconstructing minimal rooted trees. *Discrete Applied Mathematics*, **127**, 489-503.