Manuscript Title

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Abstract

This manuscript is a template (aka “rootstock”) for Manubot, a tool for writing scholarly manuscripts. Use this template as a starting point for your manuscript.

The rest of this document is a full list of formatting elements/features supported by Manubot. Compare the input (`.md` files in the `/content` directory) to the output you see below.

Basic formatting

Bold text

Semi-bold text

Centered text

Right-aligned text

Italic text

Combined *italics and* ***bold***

~~Strikethrough~~

1. Ordered list item
2. Ordered list item
    a. Sub-item
    b. Sub-item
        i. Sub-sub-item
3. Ordered list item
    a. Sub-item

- List item
- List item
- List item

subscript: H_2O is a liquid

superscript: 2^{10} is 1024.

unicode superscripts⁰¹²³⁴⁵⁶⁷⁸⁹

unicode subscripts₀₁₂₃₄₅₆₇₈₉

A long paragraph of text. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Putting each sentence on its own line has numerous benefits with regard to editing and version control.

Line break without starting a new paragraph by putting
two spaces at end of line.

Document organization

Document section headings:

Heading 1

Heading 2

Heading 3

Heading 4

A heading centered on its own printed page

Horizontal rule:

`Heading 1`'s are recommended to be reserved for the title of the manuscript.

`Heading 2`'s are recommended for broad sections such as *Abstract*, *Methods*, *Conclusion*, etc.

`Heading 3`'s and `Heading 4`'s are recommended for sub-sections.

Links

Bare URL link: https://manubot.org

Long link with lots of words and stuff and junk and bleep and blah and stuff and other stuff and more stuff yeah

Link with text

Link with hover text

Link by reference

Citations

Citation by DOI.[1]

Citation by PubMed Central ID.[2]

Citation by PubMed ID.[3]

Citation by Wikidata ID.[4]

Citation by ISBN.[5]

Citation by URL.[6]

Citation by alias.[7]

Multiple citations can be put inside the same set of brackets.[1,5,7] Manubot plugins provide easier, more convenient visualization of and navigation between citations.[2,3,7,8]

Citation tags (i.e. aliases) can be defined in their own paragraphs using Markdown's reference link syntax:

Referencing figures, tables, equations

Figure 1

Figure 2

Figure 3

Figure 4

Table 1

Equation 1

Equation 2

Quotes and code

> Quoted text

> Quoted block of text
>
> Two roads diverged in a wood, and I—
> I took the one less traveled by,
> And that has made all the difference.

Code `in the middle` of normal text, aka `inline code`.

Code block with Python syntax highlighting:

```
from manubot.cite.doi import expand_short_doi

def test_expand_short_doi():
    doi = expand_short_doi("10/c3bp")
    # a string too long to fit within page:
    assert doi == "10.25313/2524-2695-2018-3-vliyanie-enhansera-copia-i-
        insulyatora-gypsy-na-sintez-ernk-modifikatsii-hromatina-i-
        svyazyvanie-insulyatornyh-belkov-vtransfetsirovannyh-geneticheskih-
        konstruktsiyah"
```

Code block with no syntax highlighting:

```
Exporting HTML manuscript
Exporting DOCX manuscript
Exporting PDF manuscript
```

Figures

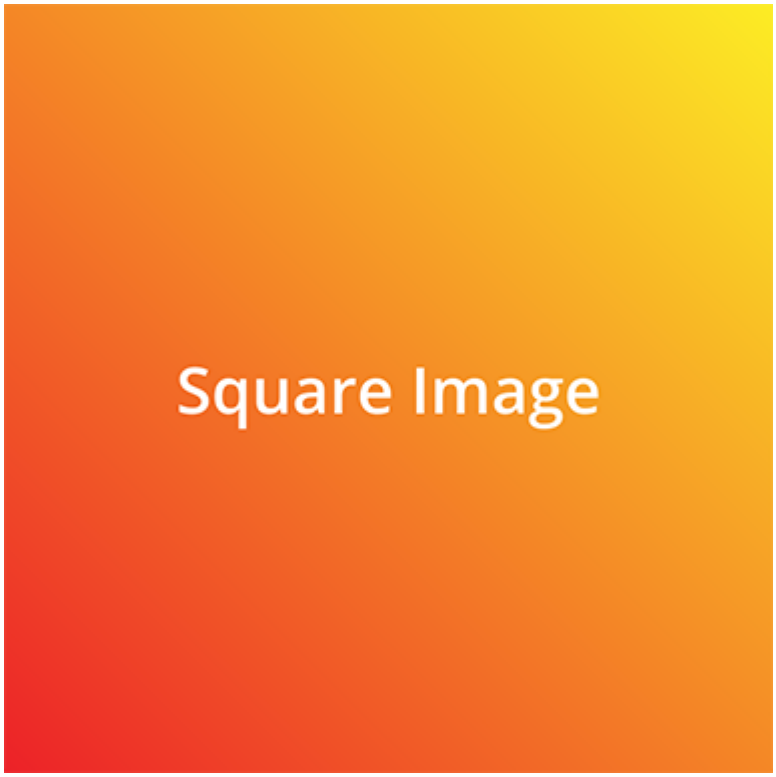


Figure 1: A square image at actual size and with a bottom caption. Loaded from the latest version of image on GitHub.

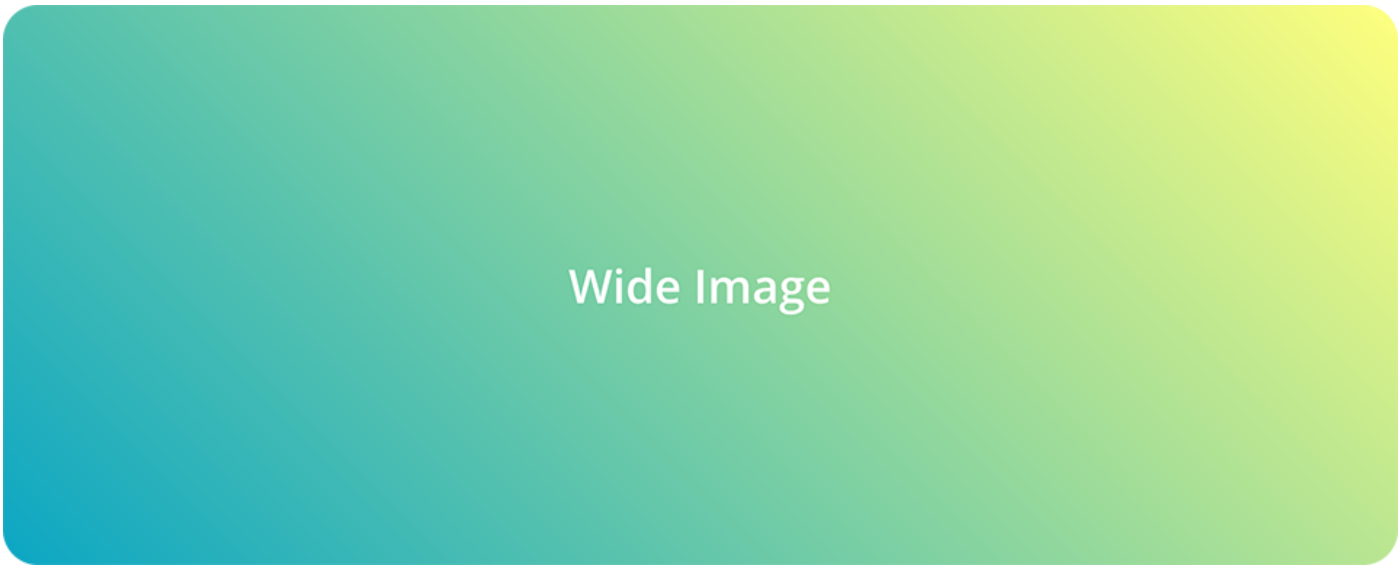


Figure 2: An image too wide to fit within page at full size. Loaded from a specific (hashed) version of the image on GitHub.

Figure 3: A tall image with a specified height. Loaded from a specific (hashed) version of the image on GitHub.

Figure 4: A vector `.svg` image loaded from GitHub. The parameter `sanitize=true` is necessary to properly load SVGs hosted via GitHub URLs. White background specified to serve as a backdrop for transparent sections of the image.

Tables

Table 1: A table with a top caption and specified relative column widths.

Bowling Scores	**Jane**	**John**	**Alice**	**Bob**
Game 1	150	187	210	105
Game 2	98	202	197	102
Game 3	123	180	238	134

Table 2: A table too wide to fit within page.

	Digits 1-33	**Digits 34-66**	**Digits 67-99**	**Ref.**
pi	3.14159265358979323 846264338327950	28841971693993751 0582097494459230	78164062862089986 2803482534211706	`piday.org`
e	2.71828182845904523 536028747135266	24977572470936999 5957496696762772	40766303535475945 7138217852516642	`nasa.gov`

Table 3: A table with merged cells using the `attributes` plugin.

	Colors	
Size	**Text Color**	**Background Color**
big	blue	orange
small	black	white

Equations

A LaTeX equation:

$$\int_0^\infty e^{-x^2} dx = \frac{\sqrt{\pi}}{2} \tag{1}$$

An equation too long to fit within page:

$$x = a + b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 \tag{2}$$

Special

⚠ **WARNING** *The following features are only supported and intended for* `.html` *and* `.pdf` *exports. Journals are not likely to support them, and they may not display correctly when converted to other formats such as* `.docx`*.*

LINK STYLED AS A BUTTON

Adding arbitrary HTML attributes to an element using Pandoc's attribute syntax:

> Manubot Manubot Manubot Manubot Manubot. Manubot Manubot Manubot Manubot. Manubot Manubot Manubot. Manubot Manubot. Manubot.

Adding arbitrary HTML attributes to an element with the Manubot `attributes` plugin (more flexible than Pandoc's method in terms of which elements you can add attributes to):

> Manubot Manubot Manubot Manubot Manubot. Manubot Manubot Manubot Manubot. Manubot Manubot Manubot. Manubot Manubot. Manubot.

Available background colors for text, images, code, banners, etc:

`white` `lightgrey` `grey` `darkgrey` `black` `lightred` `lightyellow` `lightgreen` `lightblue` `lightpurple` `red` `orange` `yellow` `green` `blue` `purple`

Using the Font Awesome icon set:

✔ ? ★ 🔔 ⊗ •••

Light Grey Banner
useful for *general information* - manubot.org

Blue Banner
useful for *important information* - manubot.org

Light Red Banner
useful for *warnings* - manubot.org

Tables (misc. test)

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

At 6pt by wrapping in `<div>` with a `style`:

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

References (misc. test)

URL citation overridden by `manual-references.json`.[9]

Table from CSV hard-coded into Markdown content

Using the pantable Pandoc filter.

Awesome **Markdown** Table

First row	defaulted to be header row	can be disabled
1	cell can contain **markdown**	It can be aribrary block element: • following standard markdown syntax • like this
2	Any markdown syntax, e.g.	$E = mc^2$

Table from CSV file source

- Using the pantable Pandoc filter with the `include` option, loading from `content/csv/by_country.csv`.
- Alignment has been specified: `LRRRRRRR`.
- 'Samples By Country' is the specified `caption`.
- `dialect: unix` is passed to `csv.reader()` by way of `csv-kwargs`
- `include-encoding` defaults to UTF-8

Samples By Country

country	is_arabiensis	is_coluzzii	is_gambiae	year	latitude	longitude	contributor
Angola	0	81	0	2009	-8.884000000000011	13.302000000000008	Joao Pinto
Burkina Faso	3	135	157	2014	11.248256756756797	-4.281929054005405	Nora Besansky
Cameroon	2	26	416	2013	5.640274774774801	13.536222972972988	Nora Besansky
Central African Republic	0	18	55	1994	4.367000000000001	18.583000000000002	Alessandra della Torre
Cote d'Ivoire	0	80	0	2012	5.898000000000095	-4.822999999999997	David Weetman
Democratic Republic of Congo	0	0	76	2015	4.282999999999999	21.017000000000035	David Weetman
Equatorial Guinea	0	0	10	2002	3.7	8.700000000000001	Igor Sharakhov
Gabon	0	0	69	2000	0.384000000000000023	9.455000000000005	Joao Pinto
Gambia, The	0	169	69	2012	13.552845878136198	-15.294989247311792	Martin Donnelly
Ghana	0	64	36	2012	5.57405	-0.934779999999999995	David Weetman
Guinea	0	11	123	2012	8.844705882352294	-9.757941176470567	Ken Vernick
Guinea-Bissau	0	0	29	2010	11.942742574257442	-15.496168316831659	Joao Pinto
Kenya	13	0	28	2012	-3.511000000000000015	39.909000000000008	Janet Midega
Lab Cross	0	0	0	-1	53.408999999999997	-2.969000000000000367	Martin Donnelly
Malawi	41	0	0	2015	-15.932999999999999996	34.755000000000003	Martin Donnelly
Mali	2	91	131	2014	12.014311111111115	-7.824622222222243	Nora Besansky
Mayotte	0	0	23	2011	-12.857086956521740	45.137434782608686	Igor Sharakhov

country	is_arabiensis	is_coluzzii	is_gambiae	year	latitude	longitude	contributor
Mozambique	0	0	74	2004	-23.7159999999999996	35.2989999999999985	Joao Pinto
Tanzania	225	0	68	2015	-2.508323333333342	33.850356666666663	David Weetman
Uganda	82	0	207	2012	0.2664965517241366	32.594275862068877	Martin Donnelly

- See that column headings are carried onto the next page in PDF.
- See column headings are squashed/wrapped in HTML, perhaps decrease font size (e.g. wrapping in `<div style="font-size:7pt">...</div>`)
- See floats wrap
- See Year colum is so squashed that it's vertical!
- Pantable uses Panflute,
  e.g. https://github.com/ickc/pantable/blob/master/pantable/csv_to_table_markdown.py
- If we needed to apply custom formatting during the build, e.g. to round those floats, we could probably write our own Pandoc filter.

Table from CSV file source with decreased font size

- Same as above, except wrapping in `<div style="font-size:7pt">...</div>`

Samples By Country

country	is_arabiensis	is_coluzzii	is_gambiae	year	latitude	longitude	contributor
Angola	0	81	0	2009	-8.884000000000011	13.302000000000008	Joao Pinto
Burkina Faso	3	135	157	2014	11.248256756756797	-4.28192905405405	Nora Besansky
Cameroon	2	26	416	2013	5.640274774774801	13.536222972972988	Nora Besansky
Central African Republic	0	18	55	1994	4.367000000000001	18.583000000000002	Alessandra della Torre
Cote d'Ivoire	0	80	0	2012	5.8980000000000095	-4.822999999999997	David Weetman
Democratic Republic of Congo	0	0	76	2015	4.282999999999999	21.017000000000035	David Weetman
Equatorial Guinea	0	0	10	2002	3.7	8.700000000000001	Igor Sharakhov
Gabon	0	0	69	2000	0.38400000000000023	9.455000000000005	Joao Pinto
Gambia, The	0	169	69	2012	13.552845878136198	-15.294989247311792	Martin Donnelly
Ghana	0	64	36	2012	5.57405	-0.9347799999999995	David Weetman
Guinea	0	11	123	2012	8.84470588235294	-9.757941176470567	Ken Vernick
Guinea-Bissau	0	0	29	2010	11.942742574257442	-15.496168316831659	Joao Pinto
Kenya	13	0	28	2012	-3.5110000000000015	39.90900000000008	Janet Midega
Lab Cross	0	0	0	-1	53.4089999999997	-2.9690000000000367	Martin Donnelly
Malawi	41	0	0	2015	-15.932999999999996	34.75500000000003	Martin Donnelly
Mali	2	91	131	2014	12.01431111111115	-7.824622222222243	Nora Besansky
Mayotte	0	0	23	2011	-12.85708695652174	45.137434782608686	Igor Sharakhov
Mozambique	0	0	74	2004	-23.71599999999996	35.298999999999985	Joao Pinto
Tanzania	225	0	68	2015	-2.508323333333342	33.85035666666663	David Weetman
Uganda	82	0	207	2012	0.2664965517241366	32.59427586206877	Martin Donnelly

- This font-size change is not honoured in some local renderings of the HTML, e.g. Datalab, but does work in others, e.g. GitHub Pages and opening a downloaded copy of `index.html` in a Chrome, although it always seems to work in the PDF.
- See that the Year column is very squashed, even with decreased font size, possibly because something has to give and no preference has been given.
  - Want some level of tighter control over table formatting, at the column level.
    - https://github.com/ickc/pantable supports a `width` argument: `a list of relative width corresponding to the width of each columns`

Table from CSV file source with decreased font size and specified column widths

- Same as above, except with column widths set to 0.125 (1 / 8) each.

Pantable docs suggest this syntax, perhaps for a different context, which will generate an error:

```
- width
    - 0.1
    - 0.2
    - 0.3
    - 0.4
```

Instead syntax like this (or equivalent) appears to work:

```
width: [0.125, 0.125, 0.125, 0.125, 0.125, 0.125, 0.125, 0.125]
```

Samples By Country

country	is_arabiensis	is_coluzzii	is_gambiae	year	latitude	longitude	contributor
Angola	0	81	0	2009	-8.884000000000011	13.302000000000008	Joao Pinto
Burkina Faso	3	135	157	2014	11.248256756756797	-4.28192905405405	Nora Besansky
Cameroon	2	26	416	2013	5.640274774774801	13.536222972972988	Nora Besansky
Central African Republic	0	18	55	1994	4.367000000000001	18.583000000000002	Alessandra della Torre
Cote d'Ivoire	0	80	0	2012	5.898000000000095	-4.822999999999997	David Weetman
Democratic Republic of Congo	0	0	76	2015	4.282999999999999	21.017000000000035	David Weetman
Equatorial Guinea	0	0	10	2002	3.7	8.700000000000001	Igor Sharakhov
Gabon	0	0	69	2000	0.3840000000000023	9.455000000000005	Joao Pinto
Gambia, The	0	169	69	2012	13.552845878136198	-15.294989247311792	Martin Donnelly
Ghana	0	64	36	2012	5.57405	-0.9347799999999995	David Weetman
Guinea	0	11	123	2012	8.84470588235294	-9.757941176470567	Ken Vernick
Guinea-Bissau	0	0	29	2010	11.942742574257442	-15.496168316831659	Joao Pinto
Kenya	13	0	28	2012	-3.5110000000000015	39.90900000000008	Janet Midega
Lab Cross	0	0	0	-1	53.4089999999997	-2.9690000000000367	Martin Donnelly
Malawi	41	0	0	2015	-15.932999999999996	34.75500000000003	Martin Donnelly
Mali	2	91	131	2014	12.01431111111115	-7.824622222222243	Nora Besansky
Mayotte	0	0	23	2011	-12.857086956521744	45.137434782608686	Igor Sharakhov
Mozambique	0	0	74	2004	-23.715999999999966	35.298999999999985	Joao Pinto
Tanzania	225	0	68	2015	-2.508323333333342	33.85035666666663	David Weetman

country	is_arabiensis	is_coluzzii	is_gambiae	year	latitude	longitude	contributor
Uganda	82	0	207	2012	0.2664965517241366	32.59427586206877	Martin Donnelly

Table from CSV file source with styles and specified column widths

- Same as above, except with styles set using the Manubot `attributes` plugin and Pandoc “divs”

Samples By Country

country	is_arabiensis	is_coluzzii	is_gambiae	year	latitude	longitude	contributor
Angola	0	81	0	2009	-8.884000000000011	13.302000000000008	Joao Pinto
Burkina Faso	3	135	157	2014	11.248256756756797	-4.28192905405405	Nora Besansky
Cameroon	2	26	416	2013	5.640274774774801	13.536222972972988	Nora Besansky
Central African Republic	0	18	55	1994	4.367000000000001	18.583000000000002	Alessandra della Torre
Cote d'Ivoire	0	80	0	2012	5.898000000000095	-4.822999999999997	David Weetman
Democratic Republic of Congo	0	0	76	2015	4.282999999999999	21.017000000000035	David Weetman
Equatorial Guinea	0	0	10	2002	3.7	8.700000000000001	Igor Sharakhov
Gabon	0	0	69	2000	0.3840000000000023	9.455000000000005	Joao Pinto
Gambia, The	0	169	69	2012	13.552845878136198	-15.294989247311792	Martin Donnelly
Ghana	0	64	36	2012	5.57405	-0.9347799999999995	David Weetman
Guinea	0	11	123	2012	8.84470588235294	-9.757941176470567	Ken Vernick
Guinea-Bissau	0	0	29	2010	11.942742574257442	-15.496168316831659	Joao Pinto
Kenya	13	0	28	2012	-3.5110000000000015	39.90900000000008	Janet Midega
Lab Cross	0	0	0	-1	53.4089999999997	-2.9690000000000367	Martin Donnelly
Malawi	41	0	0	2015	-15.932999999999996	34.75500000000003	Martin Donnelly
Mali	2	91	131	2014	12.01431111111115	-7.824622222222243	Nora Besansky
Mayotte	0	0	23	2011	-12.857086956521744	45.137434782608686	Igor Sharakhov
Mozambique	0	0	74	2004	-23.715999999999966	35.298999999999985	Joao Pinto
Tanzania	225	0	68	2015	-2.508323333333342	33.85035666666663	David Weetman
Uganda	82	0	207	2012	0.2664965517241366	32.59427586206877	Martin Donnelly

Test figures from image sources

- May need to use `secno=1` on all figures, e.g. `{#fig:id secno=1}` to avoid mislabelling/miscounting bug? https://github.com/tomduck/pandoc-fignos/issues/76

1) Separate figures with alt text (“captions”), no resizing, refs linked by default

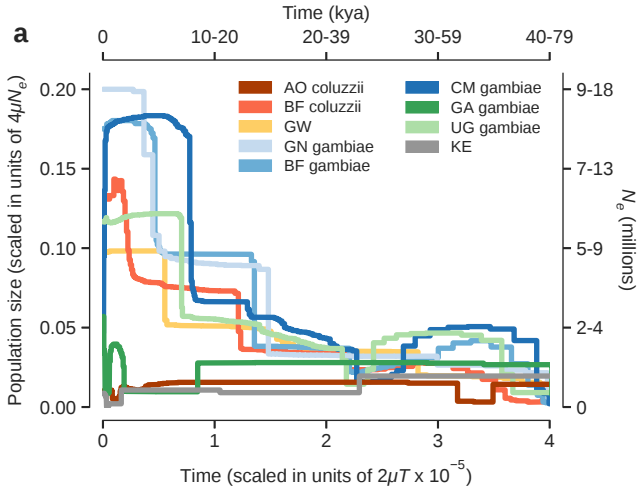


Figure 5: Stairway Plot

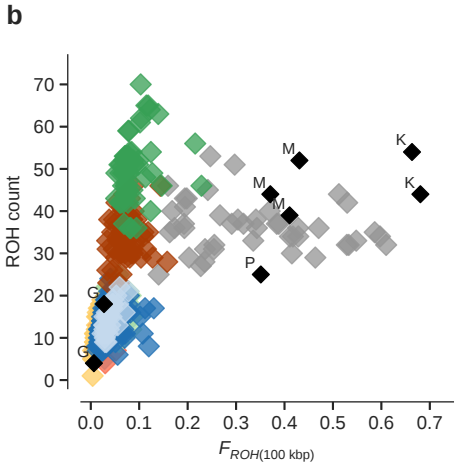


Figure 6: ROH Scatter Plot

5, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. 6, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- The “Figure {n}:” label before the alt text “captions”, e.g. Figure 6s: ROH Scatter Plot, is added automatically.
- Btw, `{@fig:figure-test-1b}` appears as `{???}`: when in “quotes”, e.g. “{**???**}”, which is unexpected, possibly a bug
- Curly brackets are to separate fig ref from adjacent non-whitespace strings, e.g. `@fig:figure-test-1b-` versus `{@fig:figure-test-1b}-`

2) Separate figures with no alt text (no “captions”), no resizing, refs linked by default

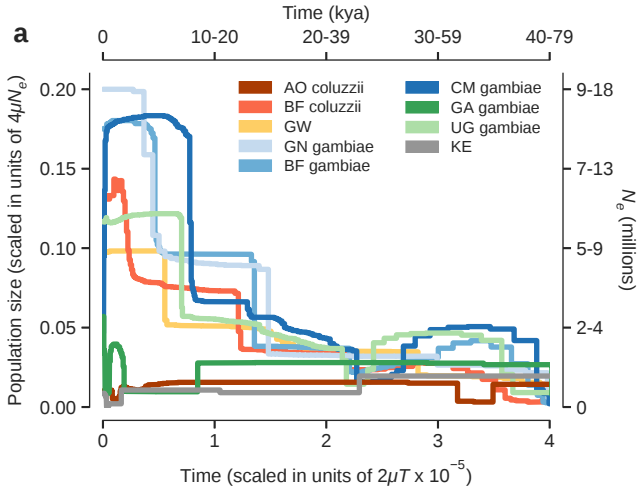


Figure 7:

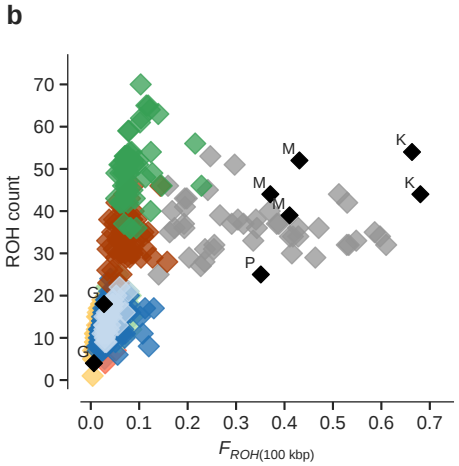


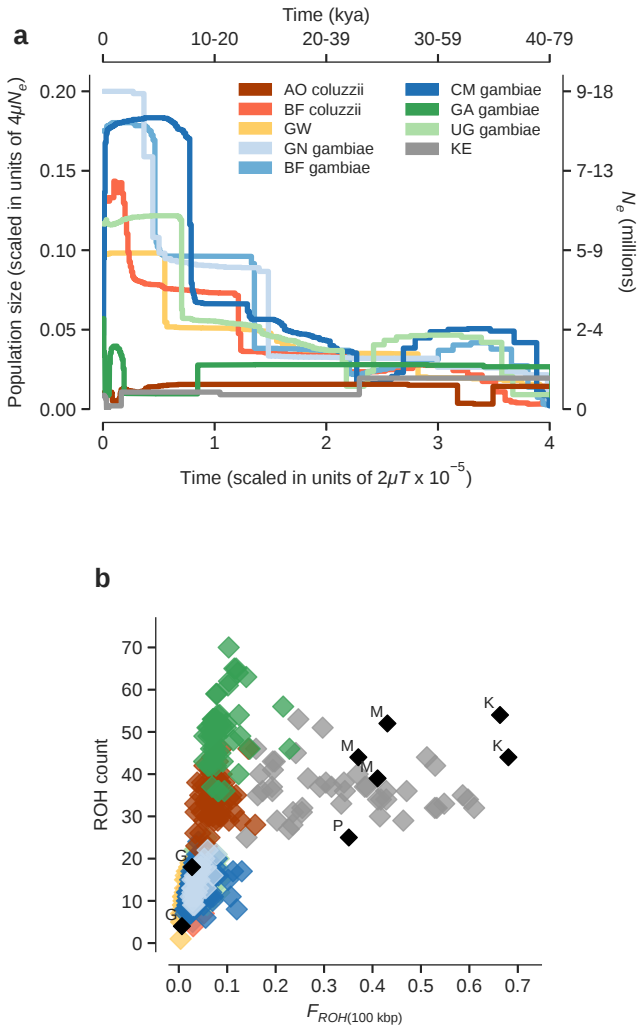
Figure 8:

7, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. 8, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- The “Figure {n}:” label before the empty alt text “captions”, e.g. Figure 8:, is added automatically.
  - Want a way to override this label’s template
- The colon after the Figure 8:, which anticipates text, looks odd/confusing when there is no text. It looks like it applies to the content that follows after that label, but it doesn’t/shouldn’t.

3) Separate subfigures using Pandoc "divs", with no alt text, no layout, no resizing

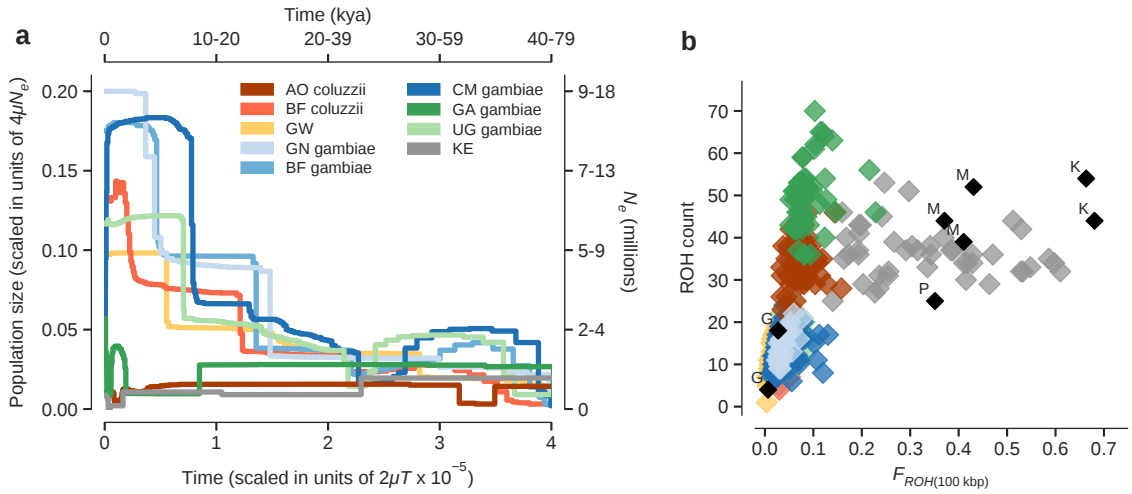
Figure 1



a, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **b**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- Pandoc divs let you group content under one Manubot figure reference, in this case two simple images (not Manubot figures in their own right)
- Putting the Markdown for the figures on separate paragraphs (as required by Pandoc) causes a vertical layout by default, which is undesirable here
- Figure references for 1**a** and 1**b** are just references/links to 1 plus manually managed suffixes
- Can switch off the link for figure references, e.g. `@fig:figure-test3{nolink=True}` gives 1 rather than 1
- The figure label was added in manually, i.e. `**Figure @fig:figure-test3{nolink=True}**`, otherwise there would be no visible label for this figure, even though it has a reference
- Note `figure-test3` has reset to "1", rather than 8 + 1. Bug? https://github.com/tomduck/pandoc-fignos/issues/76
  - Using `secno=1` here, i.e. `{#fig:figure-test3 secno=1}` has made no difference, but perhaps need to use `secno=1` on **all** figures in order to workaround. (?!)

4) Breaking of pandoc-fignos when figures are not in their own Markdown paragraph



??, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **??? {nolink=True}**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- See broken refs as "??" and `???{nolink=True}`.
- Reports errors:
  - `pandoc-fignos: Bad reference: @fig:figure-test4a.`
  - `Generating csl_item for 'figure-test3b' failed due to a NotImplementedError: Manubot does not know how to generate a csl_item for 'figure-test3b'`

Pandoc requires:

```
![Stairway Plot](images/stairway_plot.svg){#fig:figure-test4a}

![ROH Scatter Plot](images/roh_scatter.svg){#fig:figure-test4b}
```

Instead of the above:

```
![Stairway Plot](images/stairway_plot.svg){#fig:figure-test4a}
![ROH Scatter Plot](images/roh_scatter.svg){#fig:figure-test4b}
```

- This constraint prevents figures from being placed next to eachother by a simple inline method (as above) without breaking the managed references.

5) Separate figures with HTML table-based layout, with tags, no alt text, no resizing

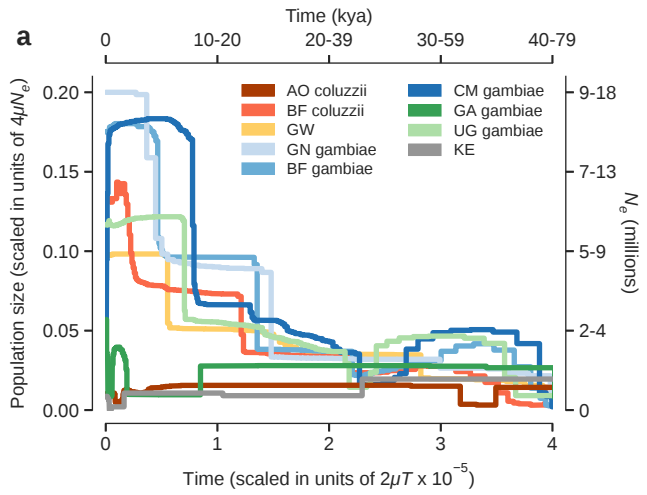


Figure a:

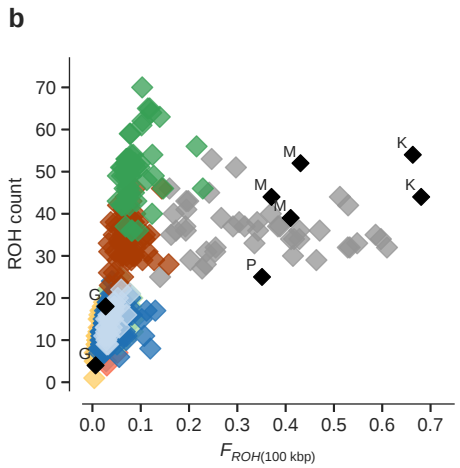
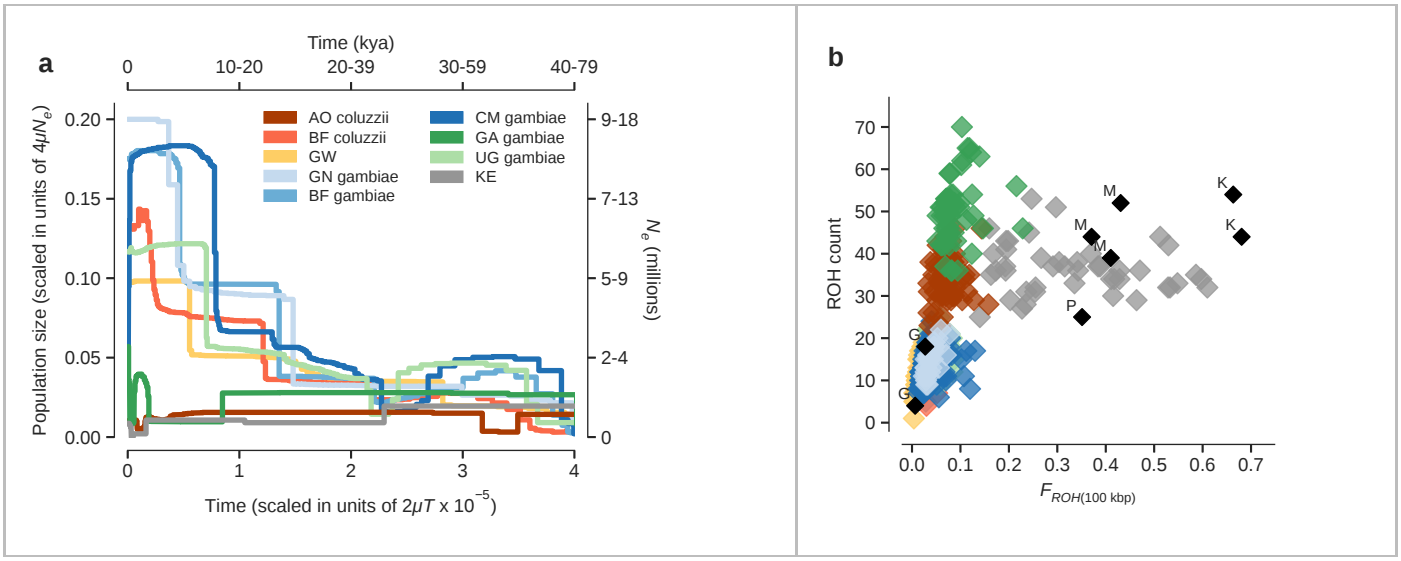


Figure b:

a, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **b**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- If the HTML contains any preceding whitespace in the markup, e.g. indentation, you will see broken HTML markup
- HTML table-based layout could be used to place the figures next to each other while still meeting the Pandoc separate-paragraph rule, but it's a bit of a hack
- Table cell borders removed using `<td style="border: none">`
- Manubot shows a figure label for each figure, even when no alt/caption text. Here the figure label/number is overidden usign specified "tags"
- Tags can be used to override the automatic managed figure number, e.g. here `@fig:figure-test5a` is labelled as "a" instead of an automatically incremented figure number. In other words, normally the figure label would be a number, which would be incremented automatically, except for bug/feature: https://github.com/tomduck/pandoc-fignos/issues/76, but here we have overridden that figure label.
- Again, the colon after the figure label, which anticipates text, looks odd/confusing when there is no text. It looks like it applies to the content that follows after that label, but it doesn't/shouldn't.

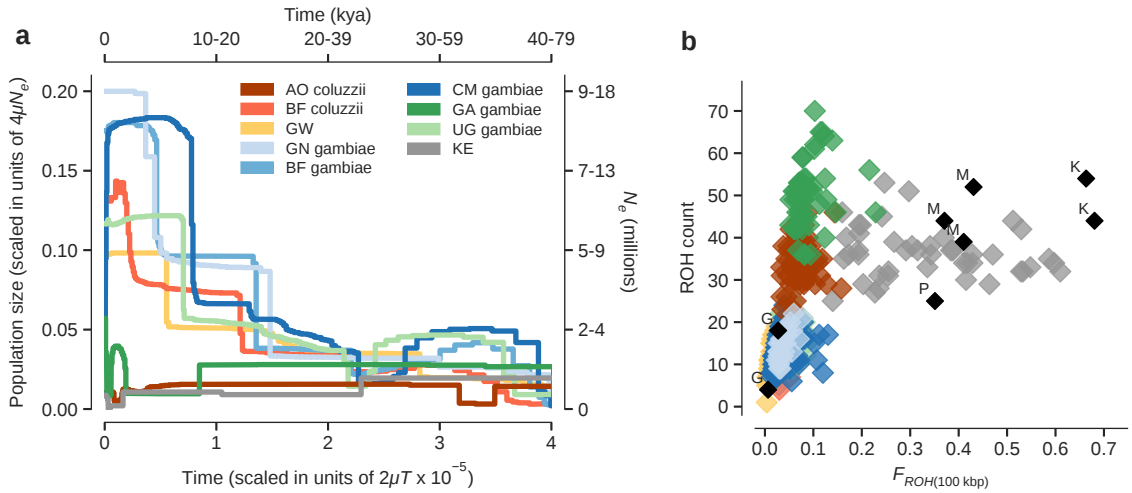
6) Breaking of separate figures with Markdown table-based layout, no alt text, no resizing



??, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **??**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- See broken figure references as "??", and no figure labels under the figures, compared to (5)
  - Generates errors `pandoc-fignos: Bad reference: @fig:figure-test6a.` and `pandoc-fignos: Bad reference: @fig:figure-test6b.`
- Want to remove visible table cell borders
- Markdown table-based layout cannot be used to place the figures next to each other without breaking the Pandoc separate-paragraph rule

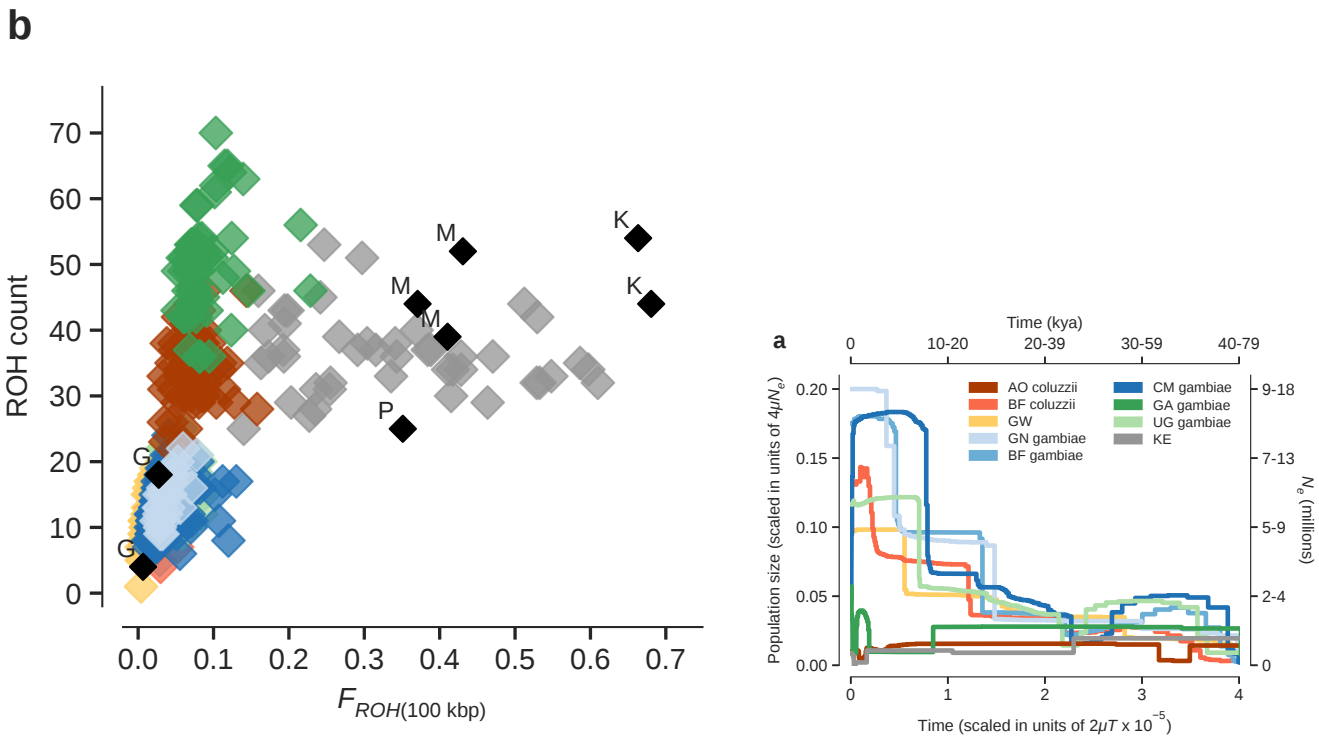
7) Separate figures using images inline (not Manubot figures), no resizing



a, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **b**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- images can be used to simulate figures, at the cost of all the figure management features of Manubot (assuming the features worked as intended)
- references for figures would have to be managed manually. A figure reference has not been added here, and would have to be added and maintained manually (outside of Manubot's system, by hard-coding the figure identifier/label, e.g. Figure 1, in the Markdown)

8) Separate figures using images inline (not Manubot figures), resized to 3in and 4in width, rearranged



a, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **b**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- Labels **a** and **b** in the description are manually coded (these are not Manubot-managed figures, only Markdown images)
- See that subfigure **b** appears before (left of) subfigure **a**, intentionally swapped around
- See that the **b** label is larger than the **a** label, because the whole **b** image has been made larger than **a**, intentionally
- embedding subfigure labels in the image means that image resizing and rearranging is frustrated
  - new images would need to be generated with new labels, or the SVG code modified by hand

9) Separate figures using images (not Manubot figures) with HTML table-based layout, resized to 3in and 4in width

If the labels were not embedded in the image, the labels would naturally need be added to the Markdown in some way, perhaps as figure “captions”.

Imagine that the two images below did not contain their **a** and **b** labels in their top-left corners:

Figure 42

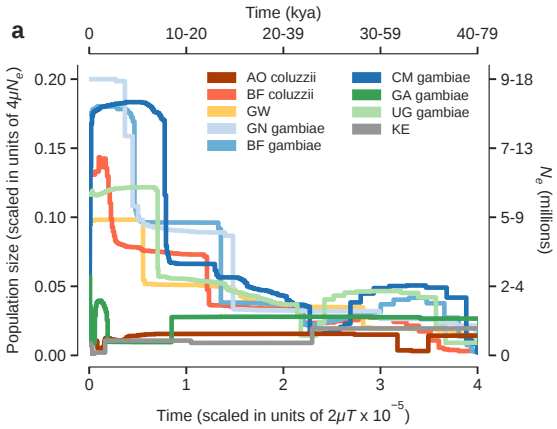


Figure a: Stairway Plot

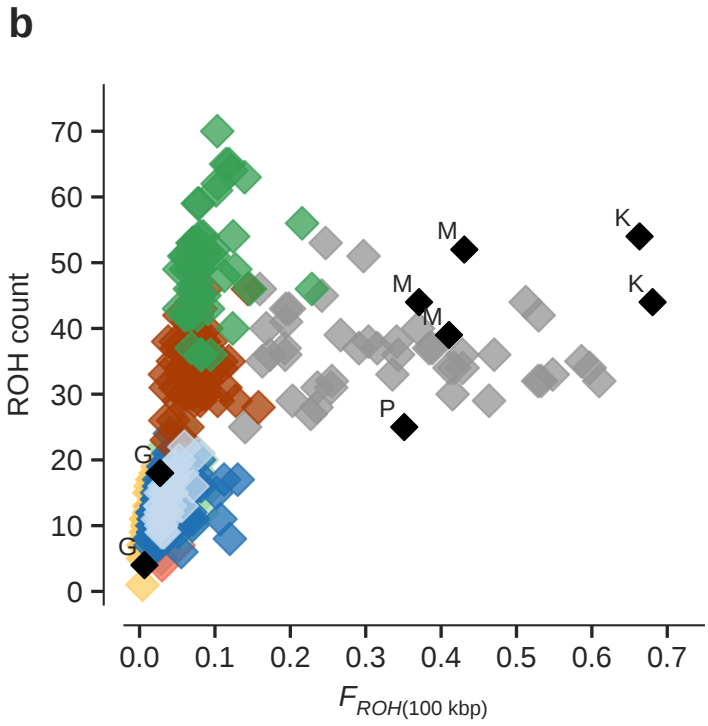


Figure b: ROH Scatter Plot

a, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **b**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

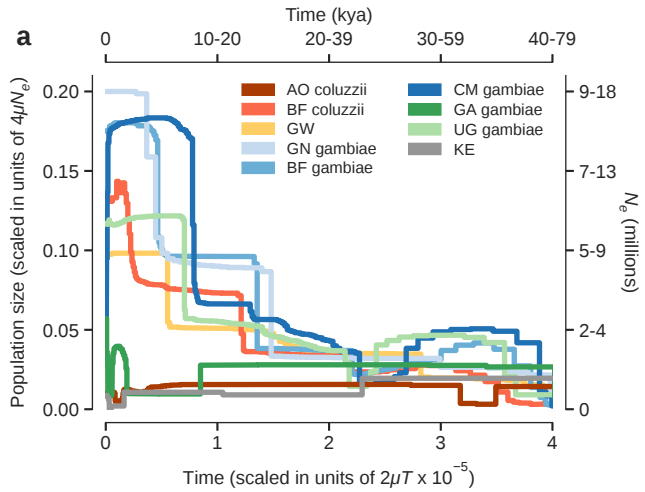
- This is similar to (1), except with the layout approach of (5)
- The **a** and **b** in the descriptions are taken from the Manubot figure tag labels, specified in Markdown.
- The label **Figure 42** was added manually. Only the subfigure identifiers/labels are managed by Manubot. There is no “Manubot figure 42”, so that label would have to be managed/maintained manually.

10) Single figure with subfigures as labelled images in a HTML table-based layout

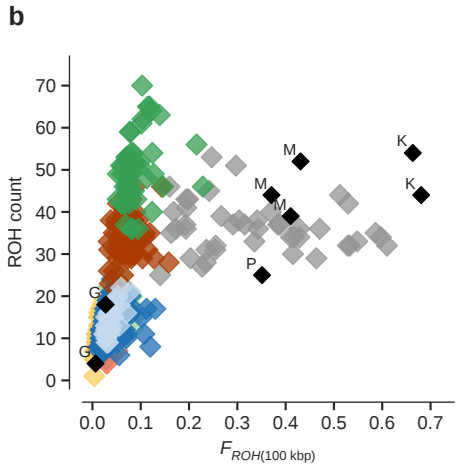
Imagine that the following two images do not contain labels **a** and **b** in their top-left corners:

Figure 1

a



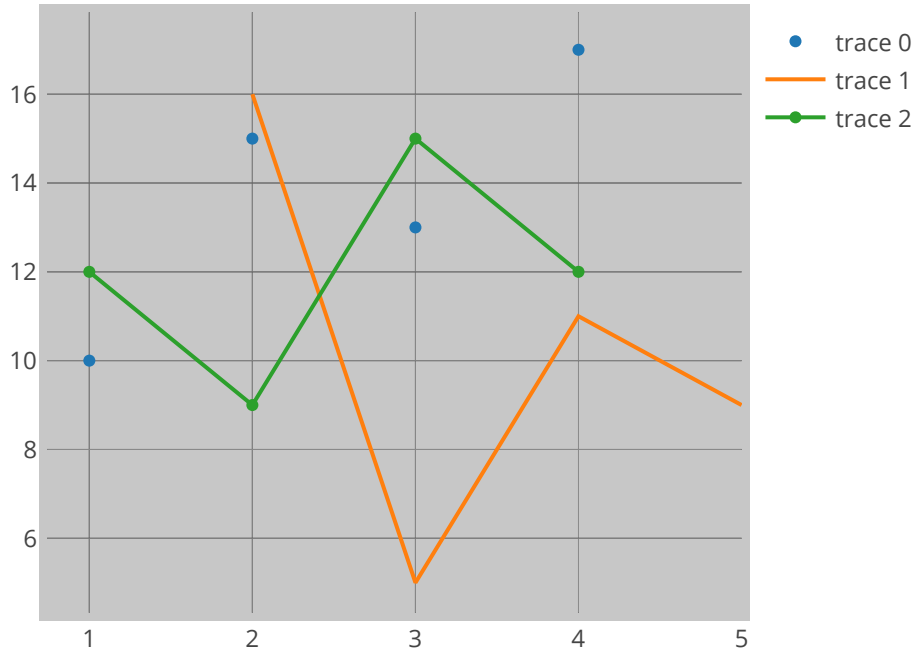
b



1a, Stairway plot of changes in population size over time. Absolute values of time and Ne are shown on alternative axes as a range of values, assuming lower and upper limits for the mutation rate μ as 2.8 × 10−9 and 5.5 × 10−9, respectively, and t = 11 generations per year. ka, thousand years ago. **1b**, Runs of homozygosity (ROH) in individual mosquitoes, highlighting recent inbreeding in Kenyan (grey) and colony (black) mosquitoes. G, Ghana; K, Kisumu; M, Mali; P, Pimperena.

- This is similar to (3), except with the layout approach of (5)
- The label **Figure 1** was added manually, but the 1 part is automatic.
- The subfigure labels **a** and **b** outside the image were added manually.
- In the description, the 1 part (of 1a and 1b) is automatic, whereas the “a” and “b” parts are added manually, i.e. hard-coded in the Markdown.

Test plotly



- See that the plot shows in HTML rendering (and is interactive) but it does not show in the PDF rendering (as a static image).

References

1. Himmelstein, D. S. *et al.* Sci-Hub provides access to nearly all scholarly literature. *eLife* **7**, (2018).

2. Beaulieu-Jones, B. K. & Greene, C. S. Reproducibility of computational workflows is automated using continuous analysis. *Nat Biotechnol* **35**, 342–346 (2017).

3. Heaven, D. Bitcoin for the biological literature. *Nature* **566**, 141–142 (2019).

4. S, c. Plan S: Accelerating the transition to full and immediate Open Access to scientific publications. (2018).

5. Suber, P. *Open access*. (MIT Press, 2012).

6. Himmelstein, D. S. *et al. Open collaborative writing with Manubot*. https://greenelab.github.io/meta-review/ (2020).

7. Ching, T. *et al.* Opportunities and obstacles for deep learning in biology and medicine. *Journal of The Royal Society Interface* **15**, 20170387 (2018).

8. Himmelstein, D. S. *et al.* Open collaborative writing with Manubot. *PLOS Computational Biology* **15**, e1007128 (2019).

9. Himmelstein, D. manubot/rootstock GitHub repository. *GitHub* https://github.com/manubot/rootstock (2019).