Journal Title Here, YYYY, pp. 1–5

doi: DOI HERE
Advance Access Publication Date: Day Month Year
Paper

PAPER

Tolerance of hybrid hosts against infections, TAC Meeting December 2022

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FOR PUBLISHER ONLY Received on Date Month Year; revised on Date Month Year; accepted on Date Month Year

Abstract

Parasites in hybrid zones can give insight into species barriers, as they are modulating the fitness of hybrid hosts. Recent findings have demonstrated lower infection intensities with parasites in hybrids in the European House Mouse Hybrid zone (HMHZ), indicating higher disease resistance. However, tolerance has not yet been addressed in depth, as it is impractical to measure in wild populations. In an attempt to predict and evaluate the health impact of parasite infections and extrapolate tolerance in the HMHZ, we use a machine learning method. A random forest model was trained on immune parameters measured in experimental lab infections with Eimeria and then applied to data obtained from field sampling. Our predictions revealed that these infections are more detrimental to hybrid male mice. This approach represents an initial step in assessing tolerance in field studies.

Key words: hybrids; parasites

The code below creates a figure. The code is included in the output because `echo=TRUE`.

```
plot(1:10,main="Some data",xlab="Distance (cm)",
     ylab="Time (hours)")
```

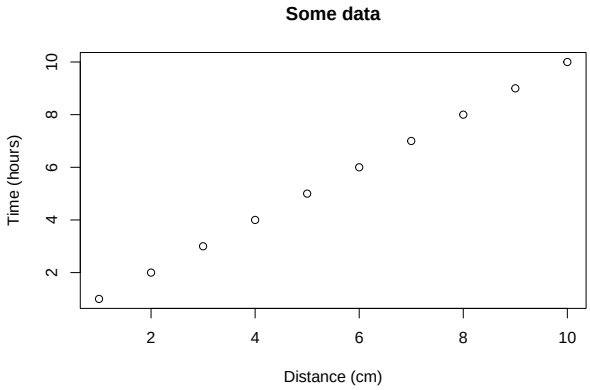

Fig. 1. This is the first figure.

You can reference this figure as follows: Fig. 1.

8.1. Figures spanning two-columns

Figures can span two columns be setting `fig.env="figure*"`.

Reference to second figure: Fig. 2

9. Tables

9.1. Generate a table using `xtable`

```
df = data.frame(ID=1:3,code=letters[1:3])

# Creates tables that follow OUP guidelines
# using xtable
library(xtable)
```

```
## Warning: package 'xtable' was built under R version 4.2.1
```

```
print(xtable(df,caption="This is a xtable table.",
             label="tab:tab1"),
      comment=FALSE,caption.placement="top")
```

Table 1. This is a xtable table.

	ID	code
1	1	a
2	2	b
3	3	c

You can reference this table as follows: Table 1.

9.2. Generate a table using `kable`

```
df = data.frame(ID=1:3,code=letters[1:3])

# kable can alse be used for creating tables
knitr::kable(df,caption="This is a kable table.",
             booktabs=TRUE,label="tab2")
```

Table 2. This is a kable table.

ID	code
1	a
2	b
3	c

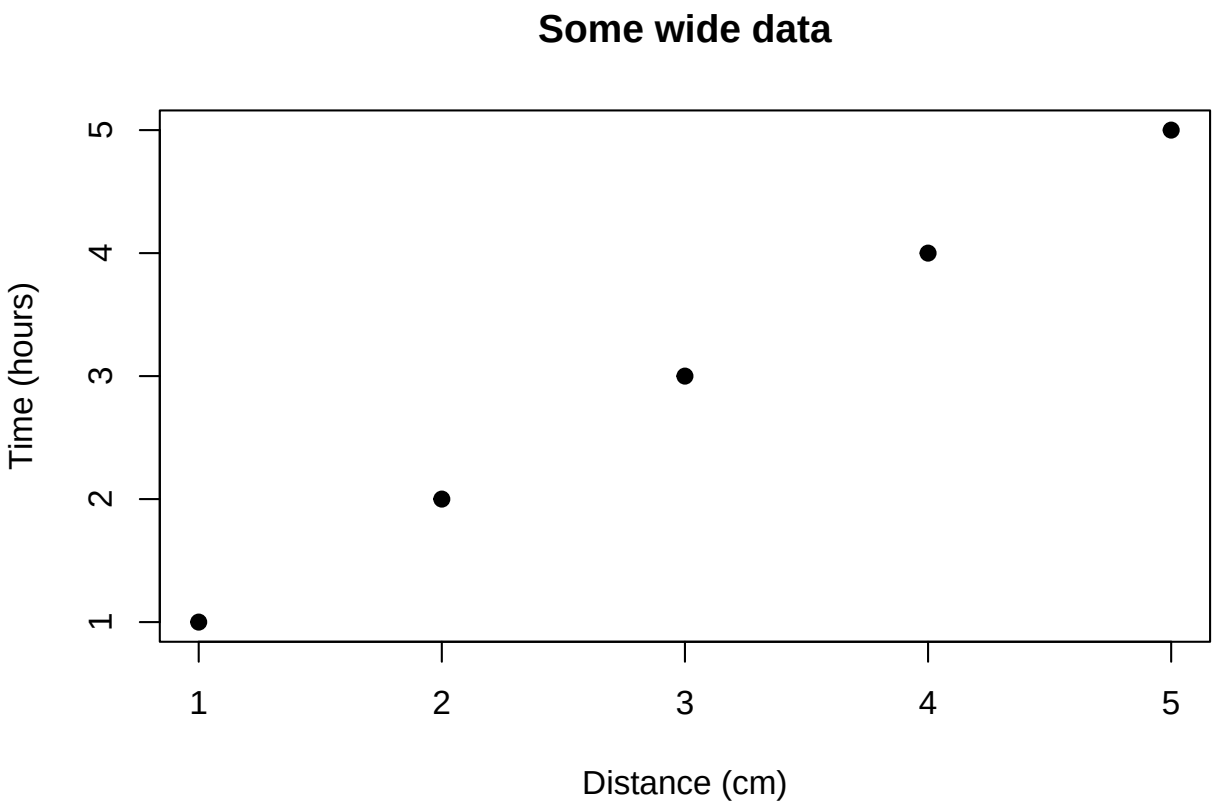

Fig. 2. This is a wide figure.

Table 3. This is a wide kable table.

ID	code1	code2	code3	code4	code5
1	a	d	g	j	m
2	b	e	h	k	n
3	c	f	i	l	o

You can reference this table as follows: Table 2.

9.3. Table spanning two columns

Tables can span two columns be setting `table.envir = "table*"` in `knitr::kable`.

```
df = data.frame(ID=1:3,code1=letters[1:3],
                code2=letters[4:6],
                code3=letters[7:9],
                code4=letters[10:12],
                code5=letters[13:15])

# kable can alse be used for creating tables
knitr::kable(df,caption="This is a wide kable table.",
             #format="latex",
             table.envir="table*",
             booktabs=TRUE,label="tab3")
```

10. Cross-referencing sections

You can cross-reference sections and subsections as follows: Section 6 and Section 5.1.

Note: the last section in the document will be used as the section title for the bibliography.

For more portable and flexible referencing of sections, equations, figures and tables, use `bookdown::pdf_document2` with YAML header option `base_format: rticles::oup_article`.

Appendices

A. Section title of first appendix

blabla

A.1. Subsection title of first appendix

and so on. . . .

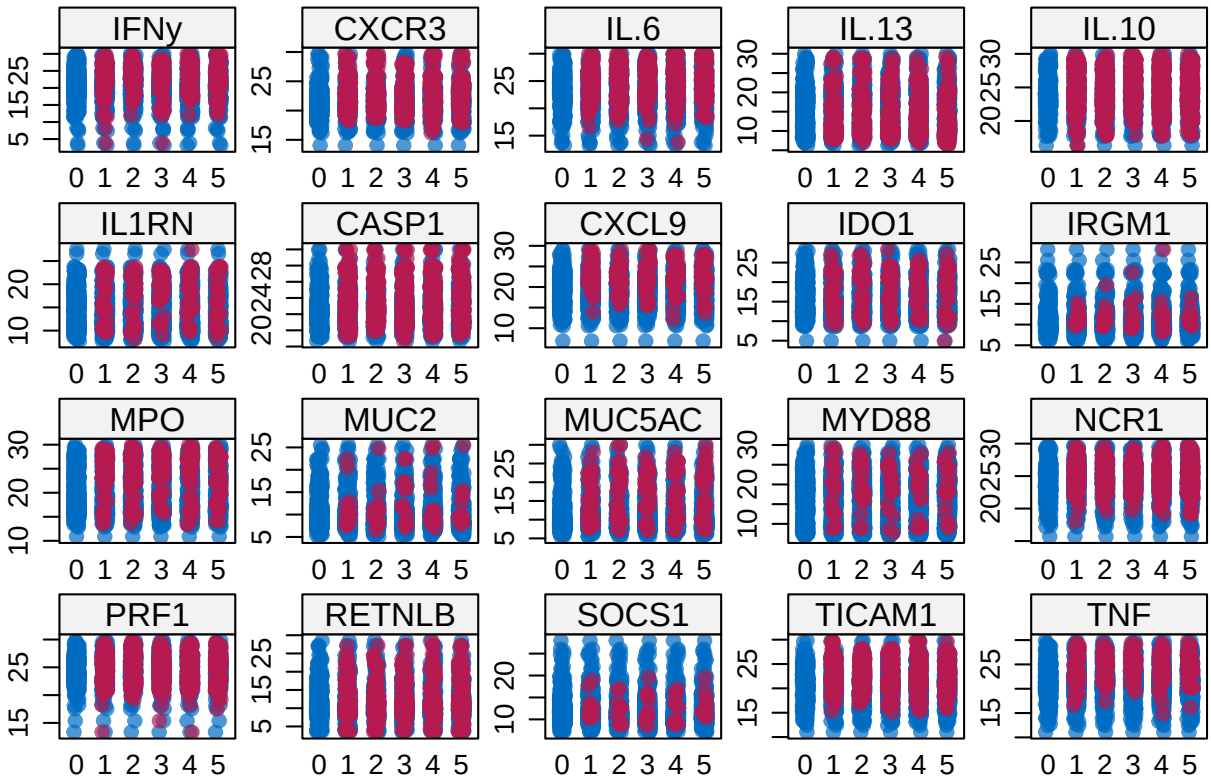

Fig. 3. Stripplot of observed and imputed data

11. References

12. Supplementarry material

```
densityplot(igf, height = 1000, width = 800)
```

```
stripplot(igf, pch = 20, cex = 1.2)
```

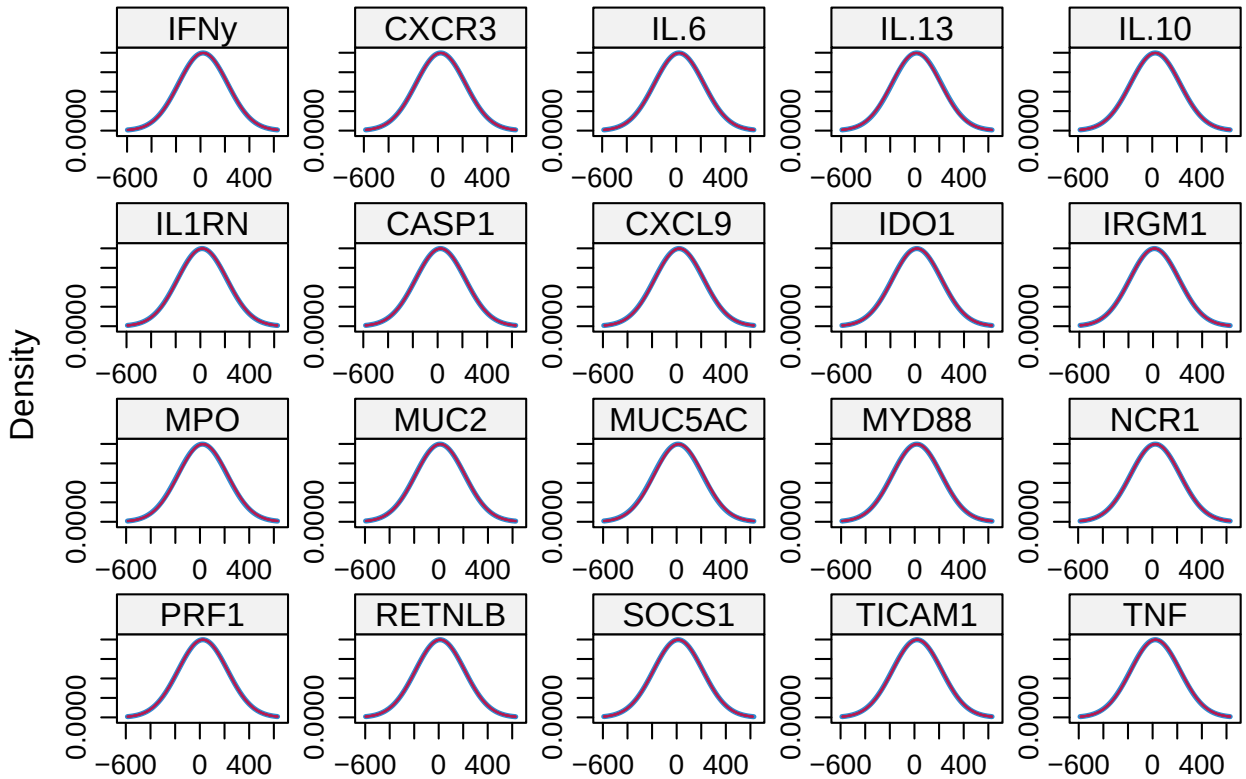

Fig. 4. Stripplot of observed and imputed data

13. Competing interests

There are no competing interest.

14. Author contributions statement

To be worked on

References

S. Van Buuren. *Flexible imputation of missing data.* CRC press, 2018.

S. Van Buuren and K. Groothuis-Oudshoorn. mice: Multivariate imputation by chained equations in r. *Journal of statistical software*, 45:1–67, 2011.

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