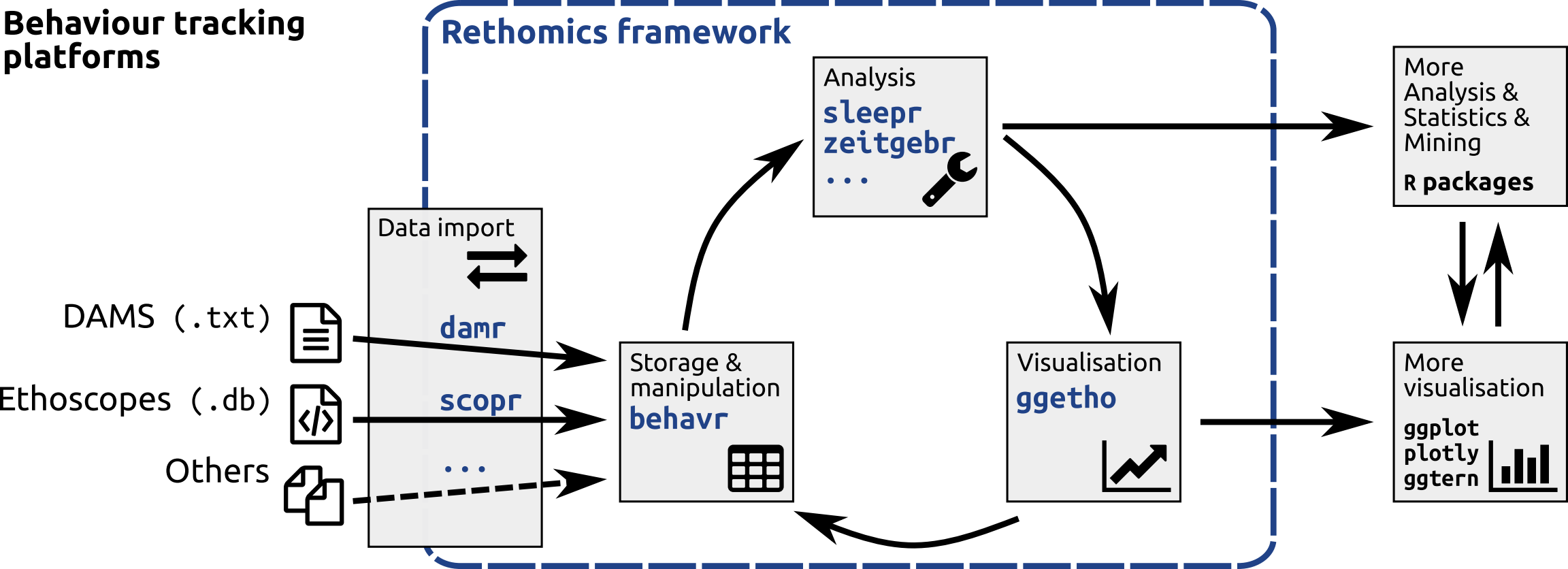


# Behaviour tracking platforms

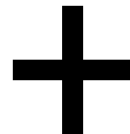


# Metadata

id	machine_name	date	...	condition	sex	...	p
xxx...xx x	machine_001	2016-09-01	...	A	M	...	$p_1$
xxx...xx y	machine_001	2016-09-01	...	B	M	...	$p_2$
xxx...xx z	machine_002	2016-09-03	...	A	F	...	$p_3$
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
n	machine <sub>n</sub>	date <sub>n</sub>	...	condition <sub>n</sub>	sex <sub>n</sub>	...	$p_n$

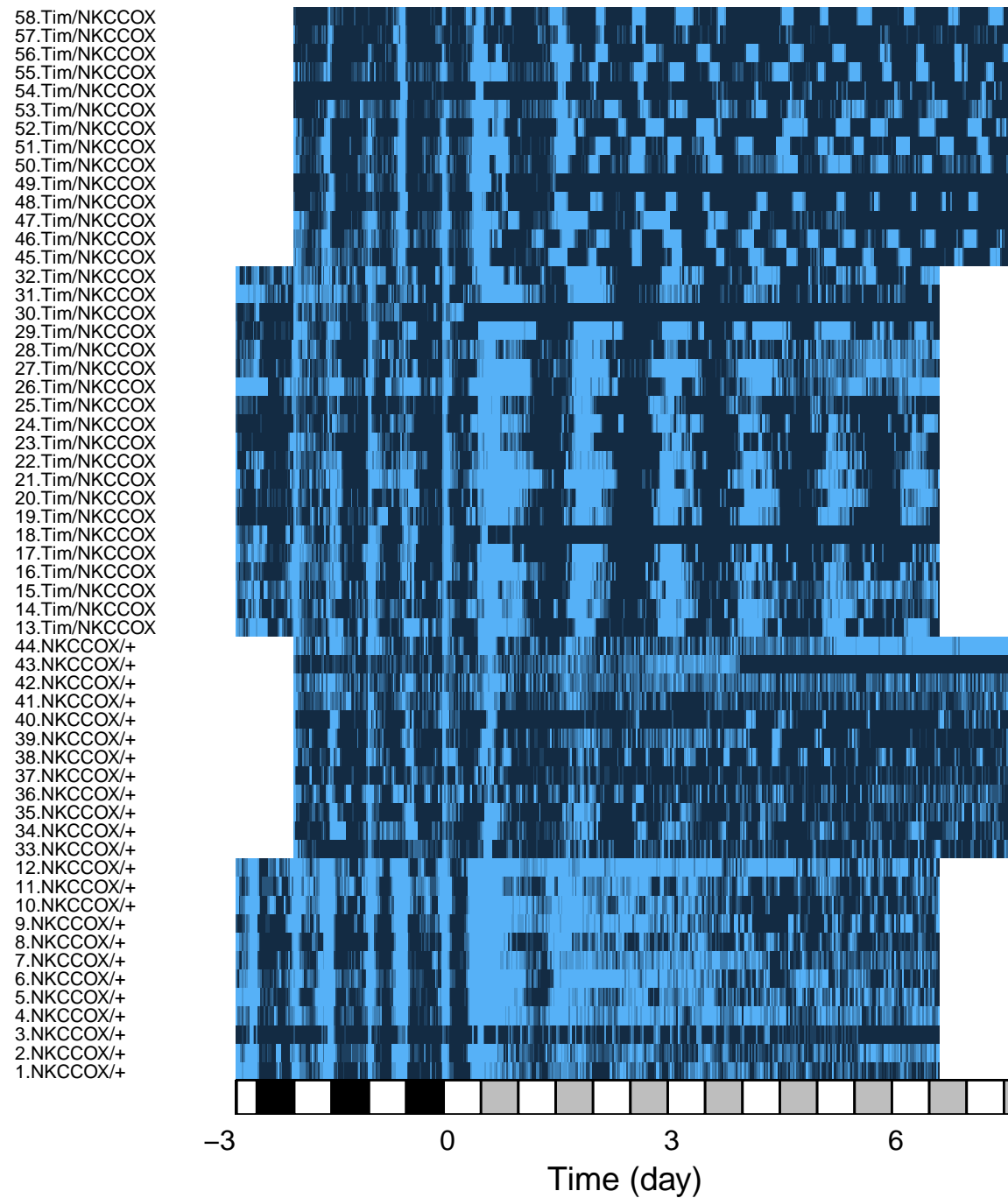
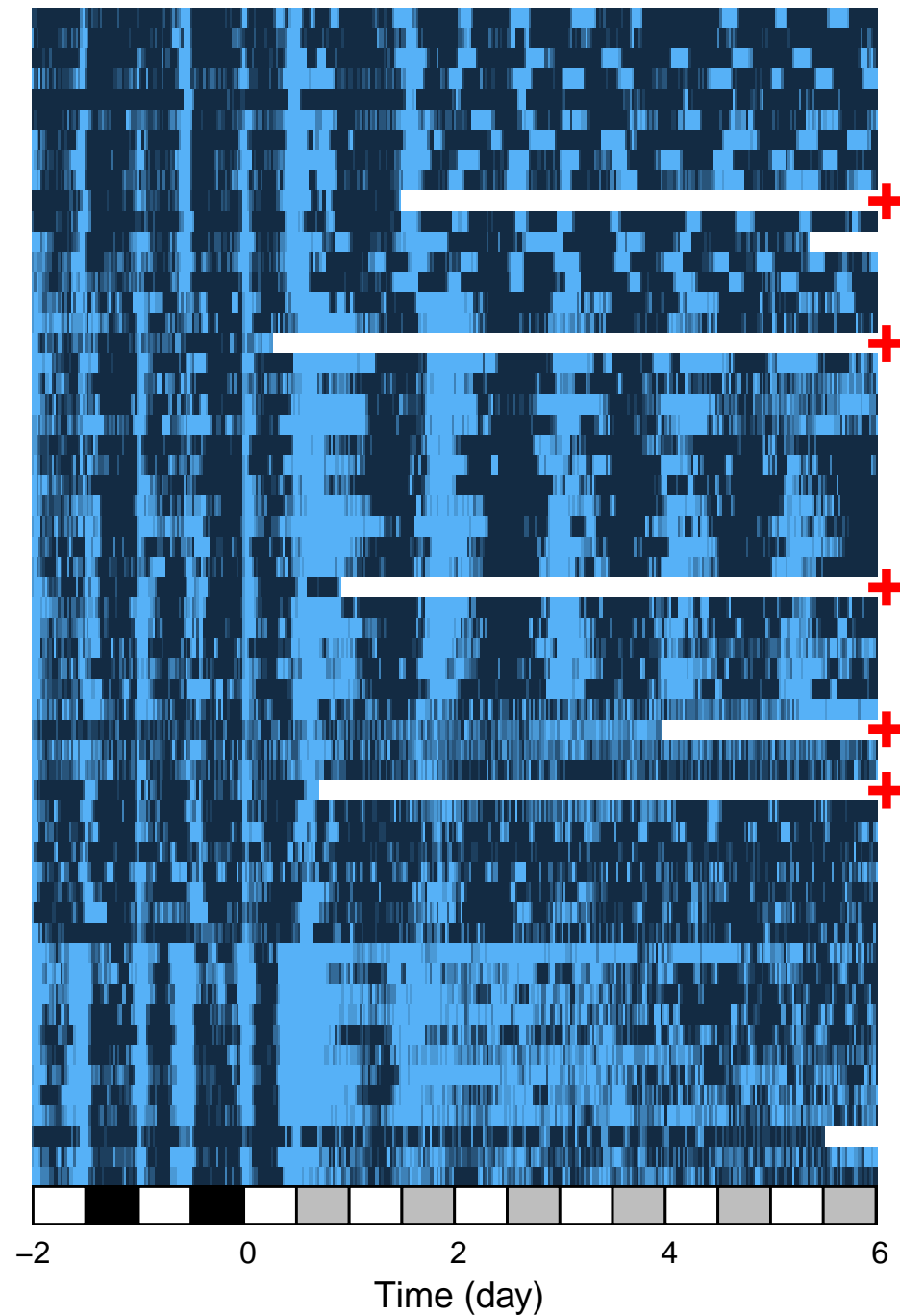
Platform fields  
(mandatory)

Experiment fields  
(arbitrary & optional)

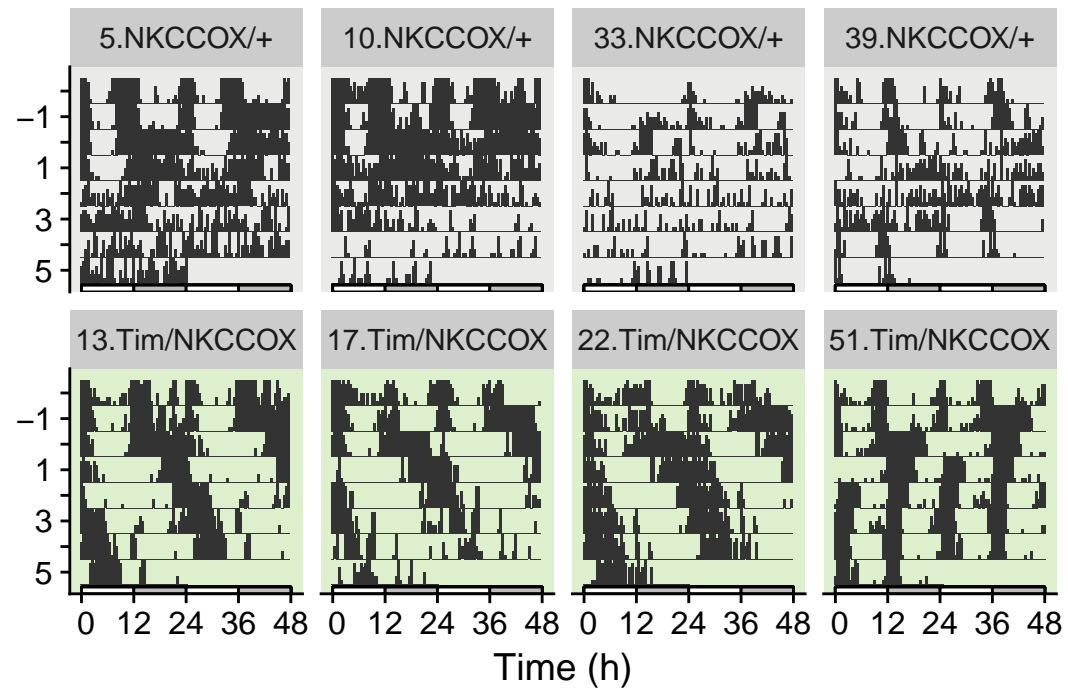
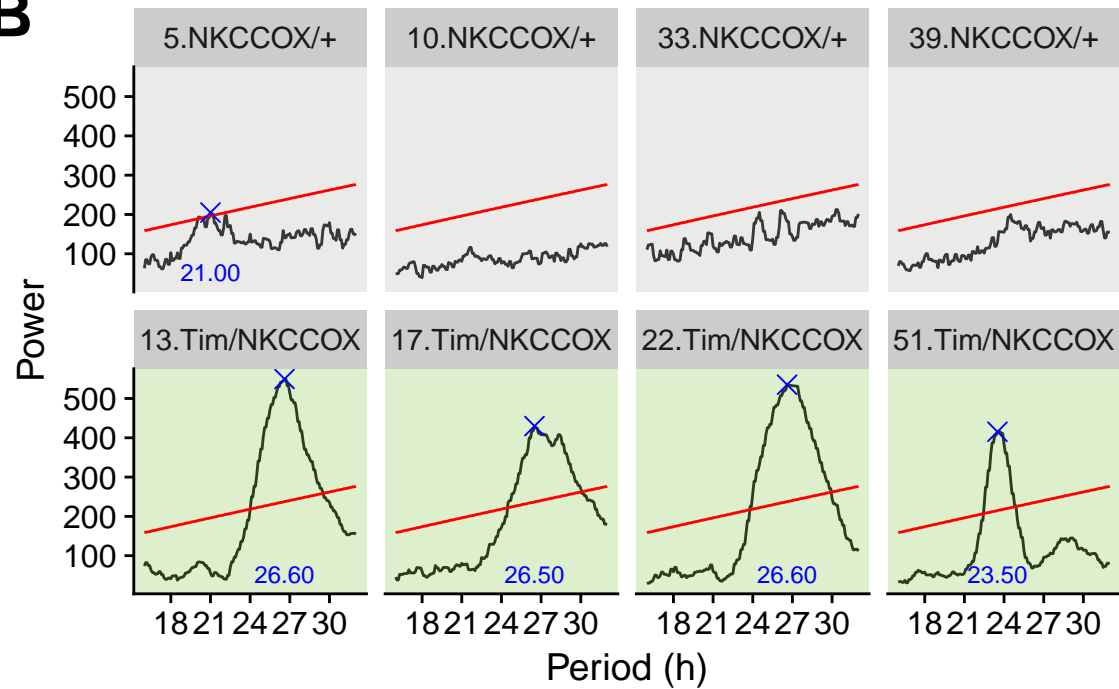


# Data

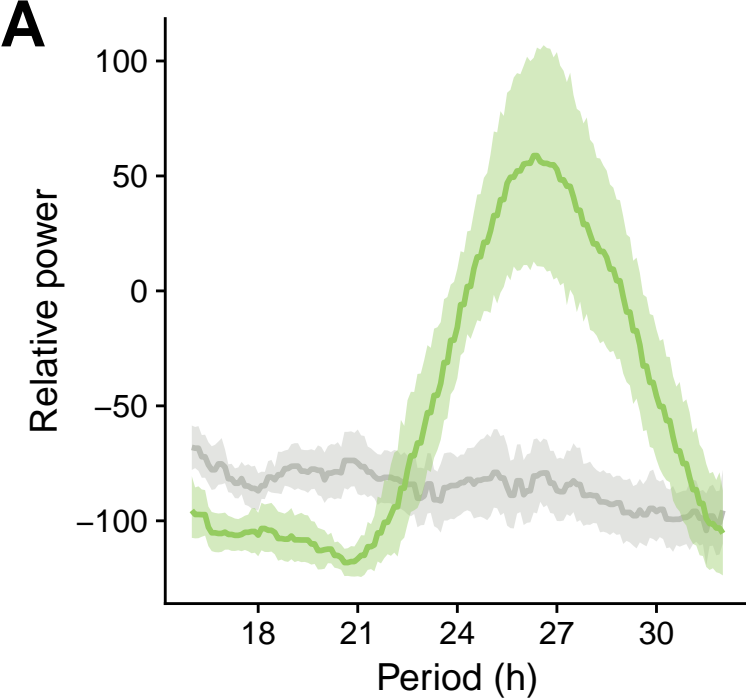
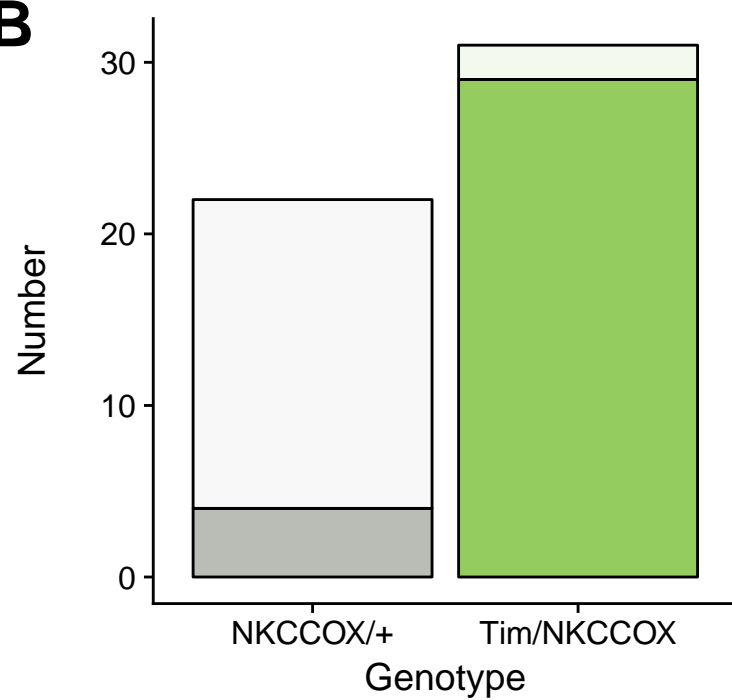
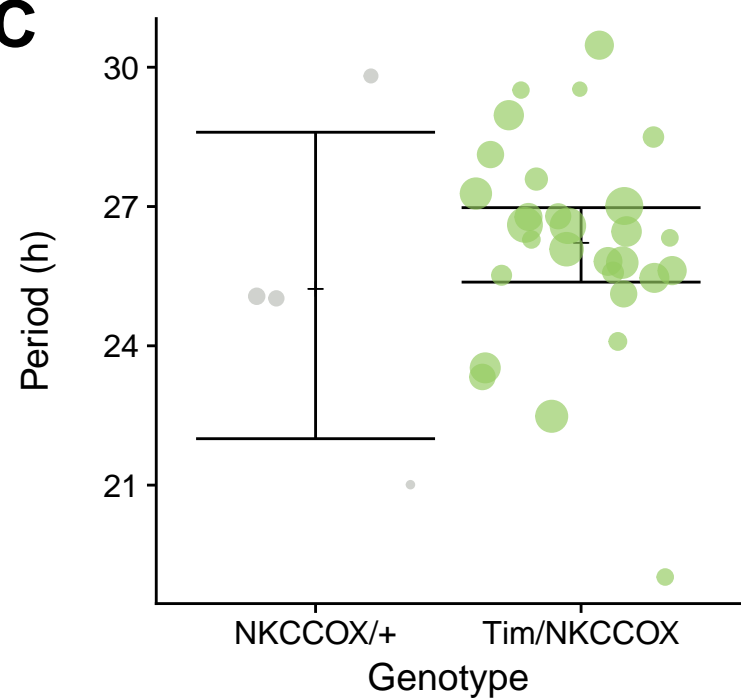
id	t	activity	...	q
xxx...xx x	1	1	⋮	$q_{1,1}$
xxx...xx x	2	0	⋮	$q_{1,2}$
xxx...xx x	3	0	⋮	$q_{1,3}$
xxx...xx x	⋮	⋮	⋮	⋮
xxx...xx y	⋮	⋮	⋮	⋮
xxx...xx z	1	0	⋮	$q_{3,1}$
xxx...xx z	2	2	⋮	$q_{3,2}$
xxx...xx z	3	0	⋮	$q_{3,3}$
xxx...xx z	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮
n	⋮	⋮	⋮	$q_{n,k_n}$

**A****B**

Moving  
0% 50% 100%

**A****B**

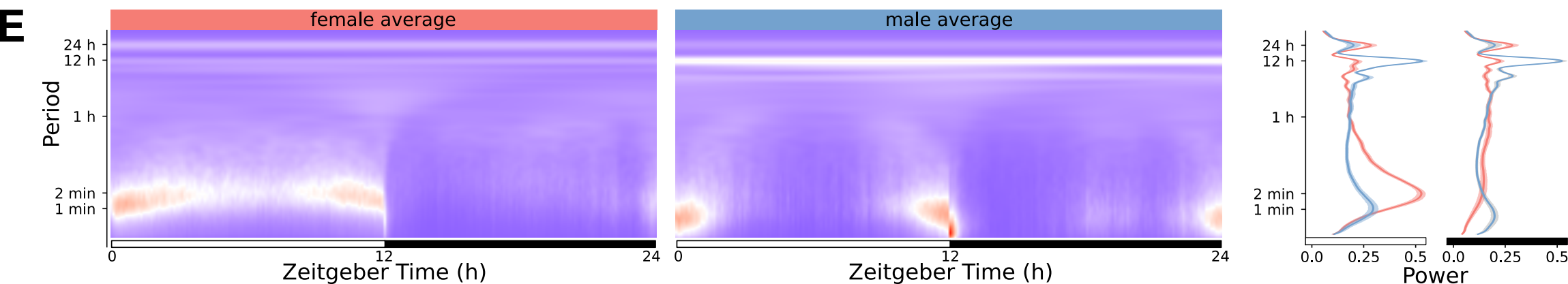
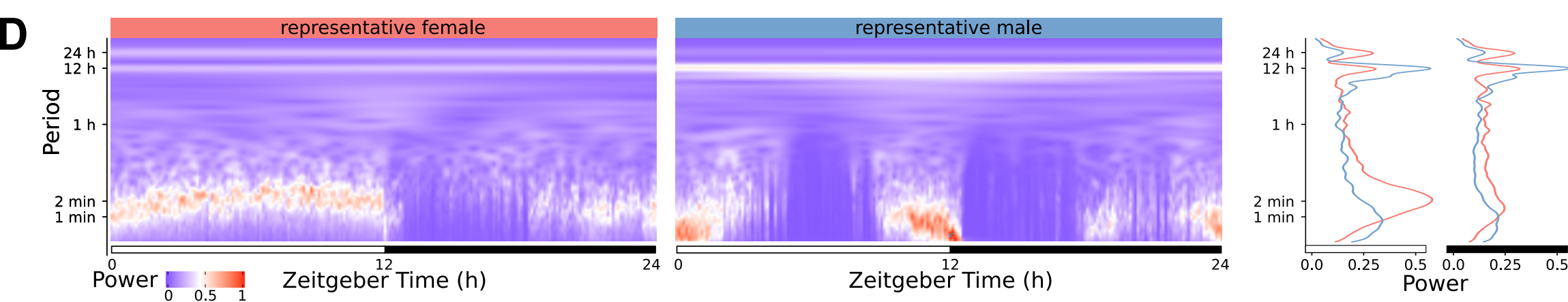
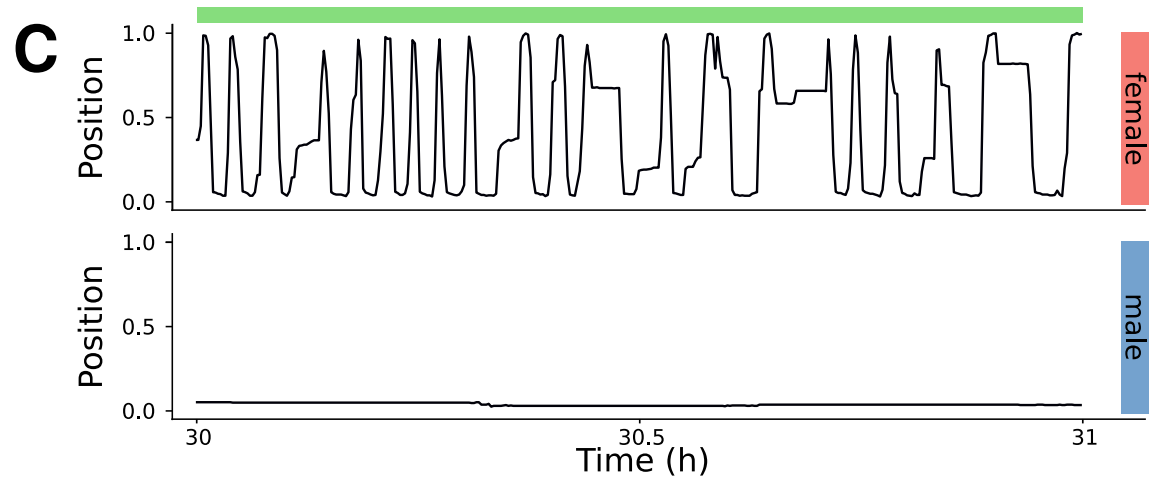
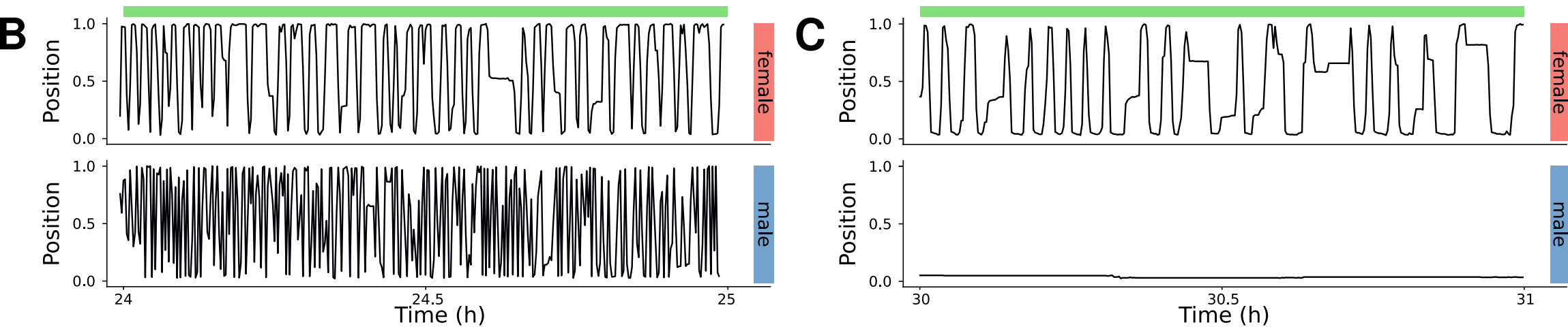
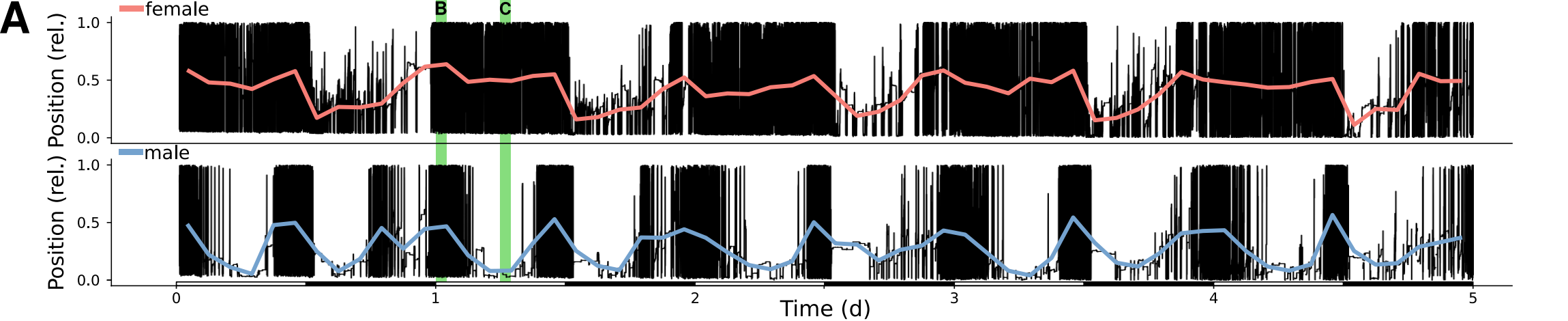
Genotype  NKCCOX/+  Tim/NKCCOX

**A****B****C**

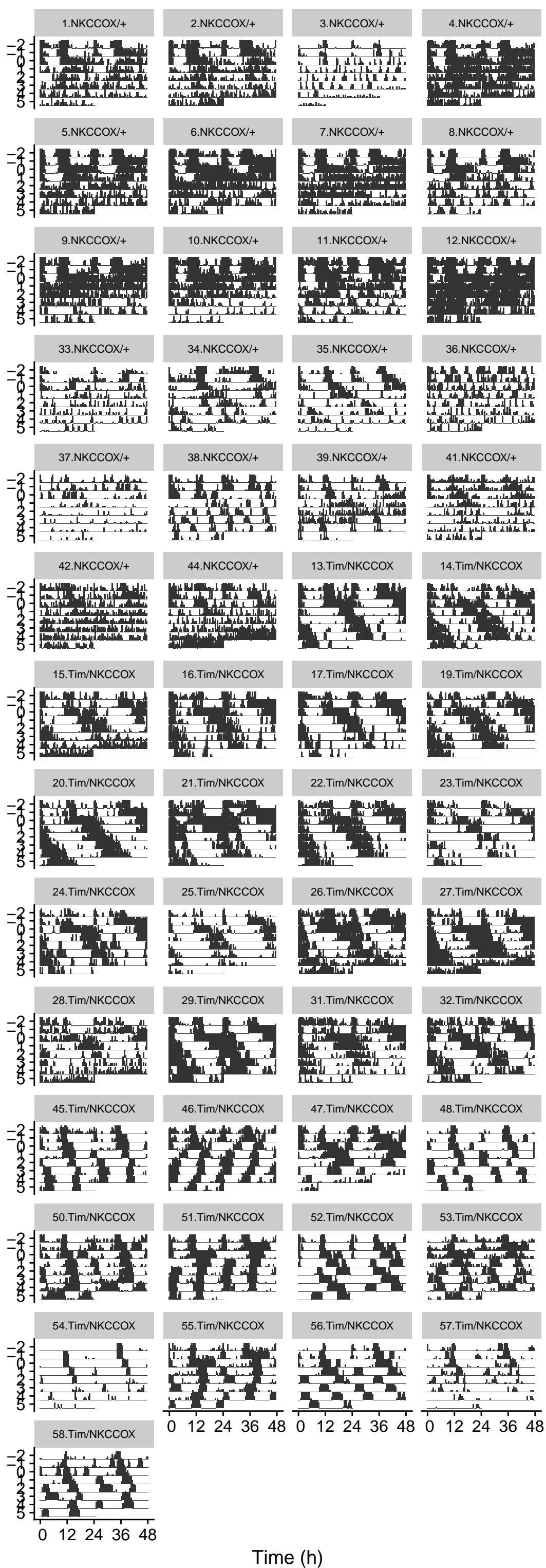
Genotype NKCCOX/+ Tim/NKCCOX

Arrhythmic Rhythmic

Peak relative power 100 200 300



Metadata		Data
Select	<div><b>dt[CRITERIA, meta = TRUE]</b><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div><i># to subet the metadata only for males</i> <i>&gt; male_meta &lt;- dt[sex == "M", meta = TRUE]</i></div>	<div><b>dt[CRITERIA]</b><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div><i># to keep only data &gt; 5s</i> <i>&gt; late_dt &lt;- dt[t &gt; 5]</i>  Note: metadata is updated when selection removes all data from one id.</div>
Alter, create & delete (meta)variables	<div><b>dt[, X := value, meta = TRUE]</b><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div><i># to create a metavariable set to "wt"</i> <i>&gt; dt[, genotype := "wt", meta = TRUE]</i>  <i># delete</i> <i>&gt; dt[, sex := NULL, meta = TRUE]</i></div>	<div><b>dt[, Y := value]</b><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div><i># to create t_2 (t - 1)</i> <i>&gt; dt[, t_2 := t - 1]</i>  <i># to delete t</i> <i>&gt; dt[, t := NULL]</i>  Note: update data in place. No copy of dt in memory.</div>
Expand metavariables as variables	<div><b>dt[xmv(X)]</b><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div><i># to select data with sex</i> <i>&gt; dt &lt;- dt[xmv(sex) == "M"]</i>  <i># to copy a metavariable as a variable</i> <i>&gt; dt[, s := xmv(sex)]</i></div>	<div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div>
Aggregate & summary	<div><b>dt[, OPERATION, by = id]</b><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div><i># to compute mean activity, per individual</i> <i>&gt; dt &lt;- dt[,.(</i> <i>          mean_act = mean(activity)</i> <i>          ), by = id]</i>  <i># to count reads per id</i> <i>&gt; dt[, .N, by = id]</i></div>	<div><b>OPERATION</b><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div><div></div></div></div>
Join data & metadata	<div><b>rejoin(dt)</b><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div><i># to reunite data and metadata</i> <i>&gt; full_table &lt;- rejoin(dt)</i>  Note: used mostly after aggregation or preprocessing</div>	<div><b>REJOIN</b><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div>

**A****B**