Practice Heat Shocks

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Libraries

```
library(lubridate)
```

```
##
## Attaching package: 'lubridate'
## The following object is masked from 'package:base':
##
##     date
```

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:lubridate':
##
##     intersect, setdiff, union
## The following objects are masked from 'package:stats':
##
##     filter, lag
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(ggplot2)
library(tidyr)
library(data.table)
```

```
##
## Attaching package: 'data.table'
## The following objects are masked from 'package:dplyr':
##
##     between, first, last
## The following objects are masked from 'package:lubridate':
##
```

```
##     hour, isoweek, mday, minute, month, quarter, second, wday,
##     week, yday, year
```

```
dat<-fread("https://raw.githubusercontent.com/HannahHChu/Proteome_stability_project/master/Data/2018-06-

#glimpse(dat)
```

Changing MIN:SEC to minutes

```
rtime<- dat$kd_time
time<-lubridate::minute(ms(rtime))+lubridate::second(ms(rtime))/60
#time

#Adding new column of correct time
dat$time<-time
```

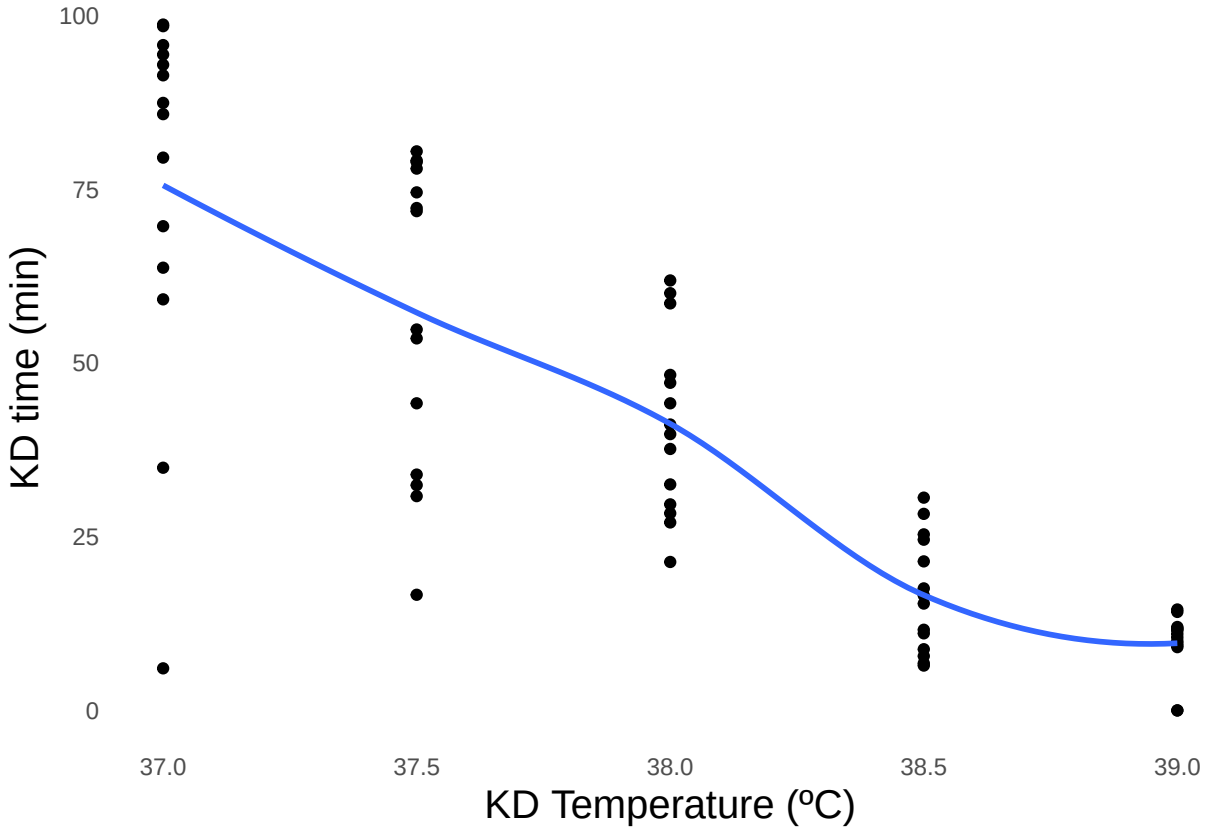
Creating the Data Frame

```
df<-data.frame(dat$kd_temp, dat$time, dat$treatment, dat$line)

#filtering out the non-static practice trials
staths<- df%>%
          filter(dat$treatment == "static")
```

Figures

```
#Overview of static HS
staticoverview <- ggplot(staths,aes(x=dat.kd_temp,y=dat.time))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=9),text=element_text(size=15))+geom_smooth(method=
staticoverview
```

```
## `geom_smooth()` using method = 'loess'
```




```
#Static HS based on line
p<- ggplot(staths,aes(x=dat.kd_temp,y=dat.time, colour=dat.line))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=9),text=element_text(size=15))+geom_smooth(method=
fig <- p + scale_colour_discrete(name = "lines")
fig
```

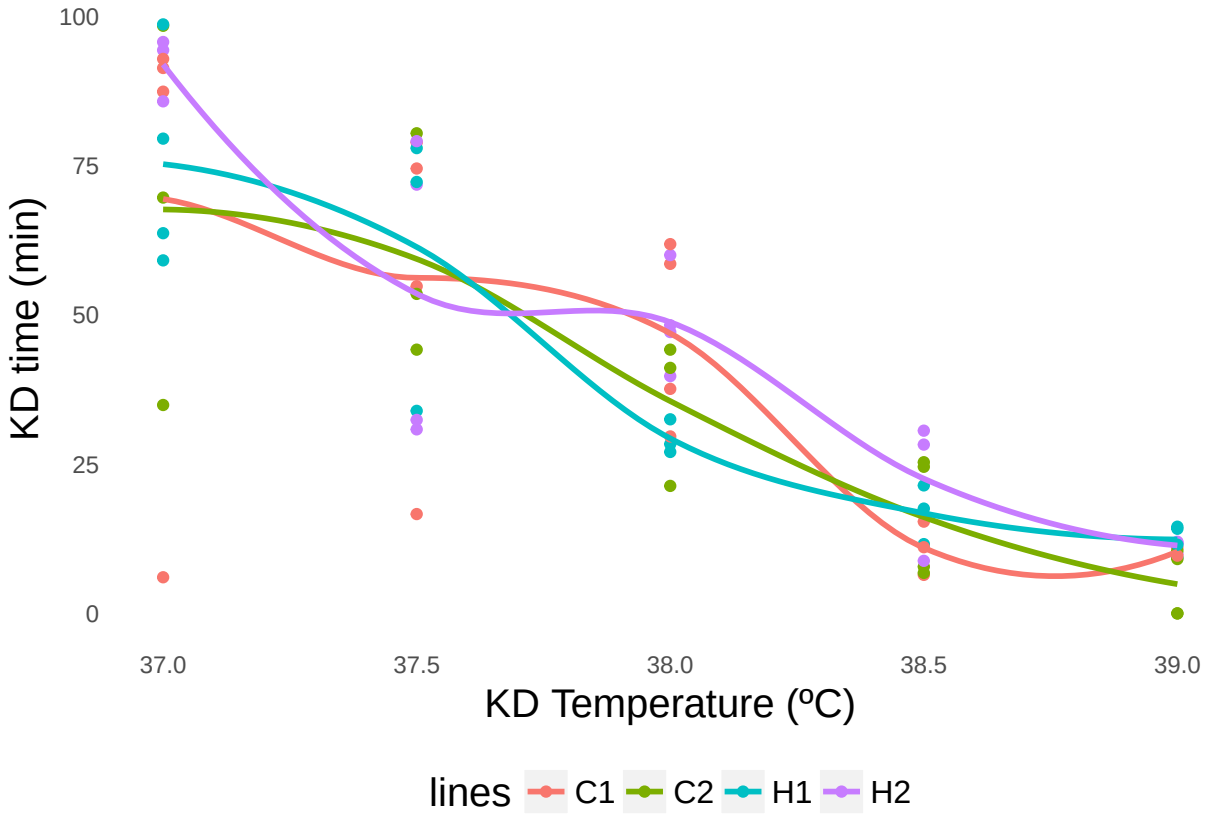
```
## `geom_smooth()` using method = 'loess'
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 36.99
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 1.01
```

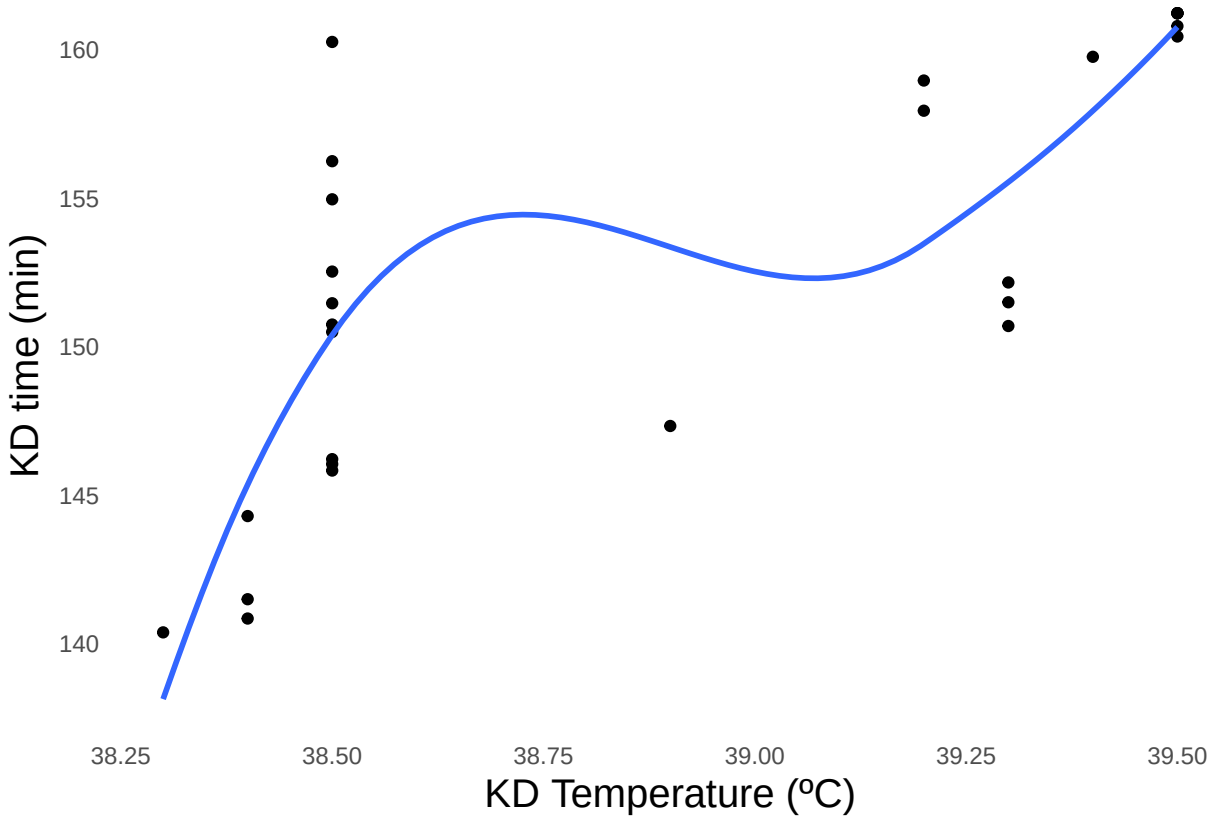
```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 4.8814e-17
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 0.25
```




```
#Overview of slow ramp
slowdat <- df%>%
  filter(dat$treatment == "slow", dat$kd_temp > "37")

slowoverview <- ggplot(slowdat,aes(x=dat.kd_temp,y=dat.time))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=9),text=element_text(size=15))+geom_smooth(method=
slowoverview
```

```
## `geom_smooth()` using method = 'loess'
```




```
#Slow ramp HS based on line
q<- ggplot(slowdat,aes(x=dat.kd_temp,y=dat.time, colour=dat.line))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=9),text=element_text(size=15))+geom_smooth(method=
slowfig <- q + scale_colour_discrete(name = "lines")
slowfig
```

```
## `geom_smooth()` using method = 'loess'
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 38.495
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.705
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 0.49
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 38.395
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.9055
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0
```

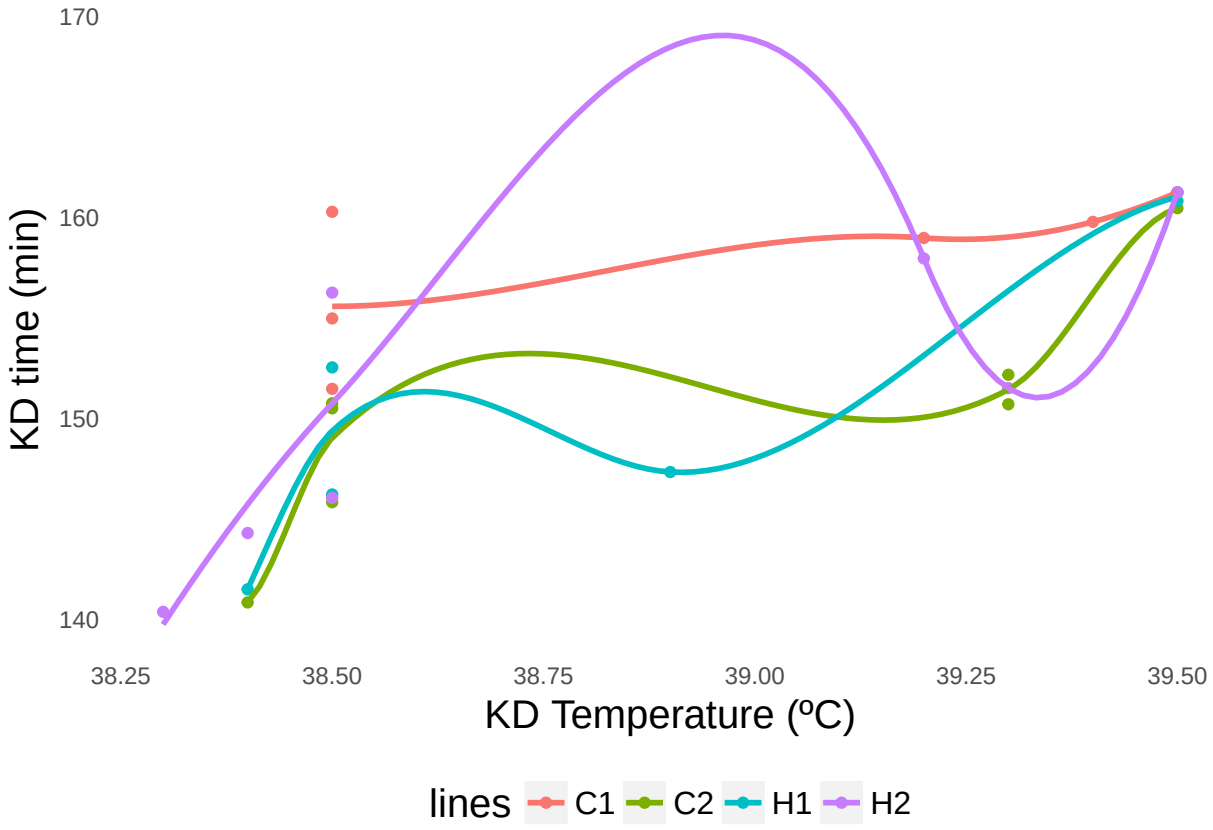
```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 1.011
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 38.395
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.5055
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 2.2957e-17
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 1.011
```




```
#Overview of fast ramp
fastdat <- df%>%
  filter(dat$treatment == "fast")

fastoverview <- ggplot(fastdat,aes(x=dat.kd_temp,y=dat.time))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=9),text=element_text(size=15))+geom_smooth(method=
fastoverview
```

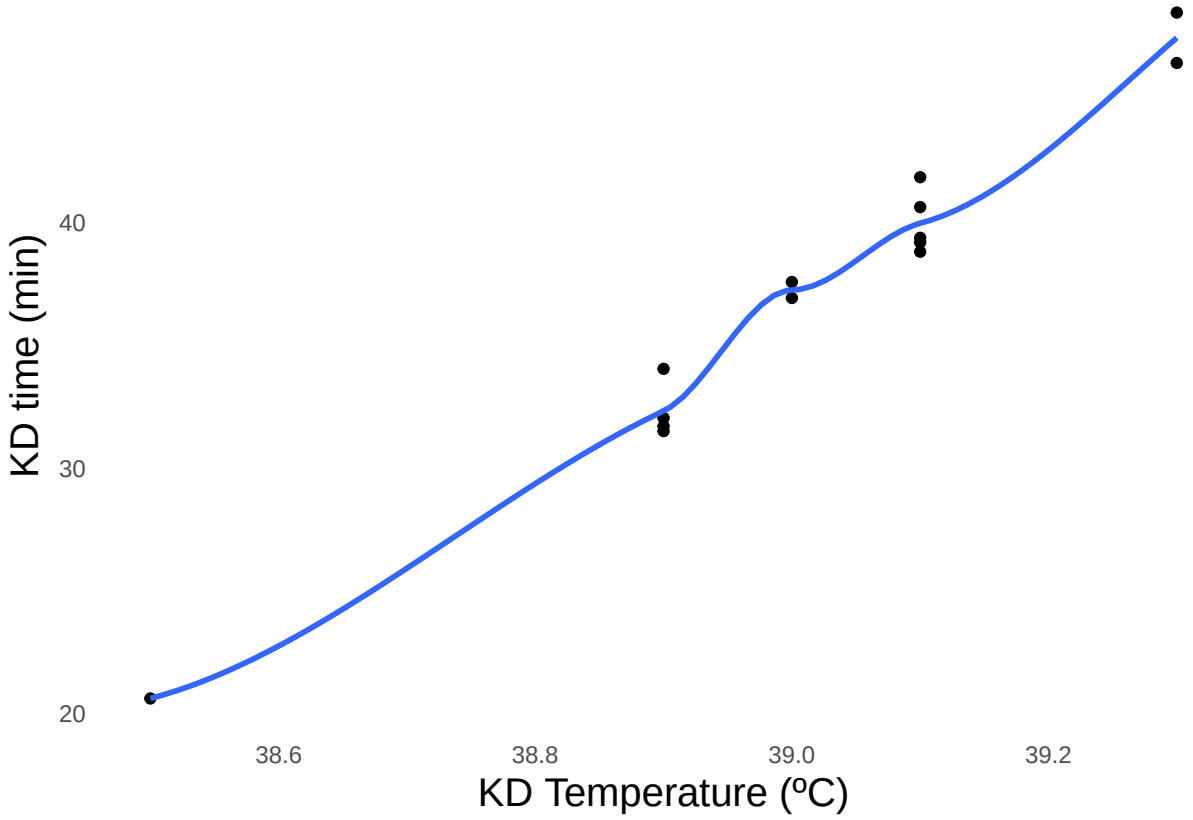
```
## `geom_smooth()` using method = 'loess'
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 39
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.1
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 0.04
```




```
#Fast ramp HS based on line
r<- ggplot(fastdat,aes(x=dat.kd_temp,y=dat.time, colour=dat.line))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=9),text=element_text(size=15))+geom_smooth(method=
fastfig <- r + scale_colour_discrete(name = "lines")
fastfig
```

```
## `geom_smooth()` using method = 'loess'
```

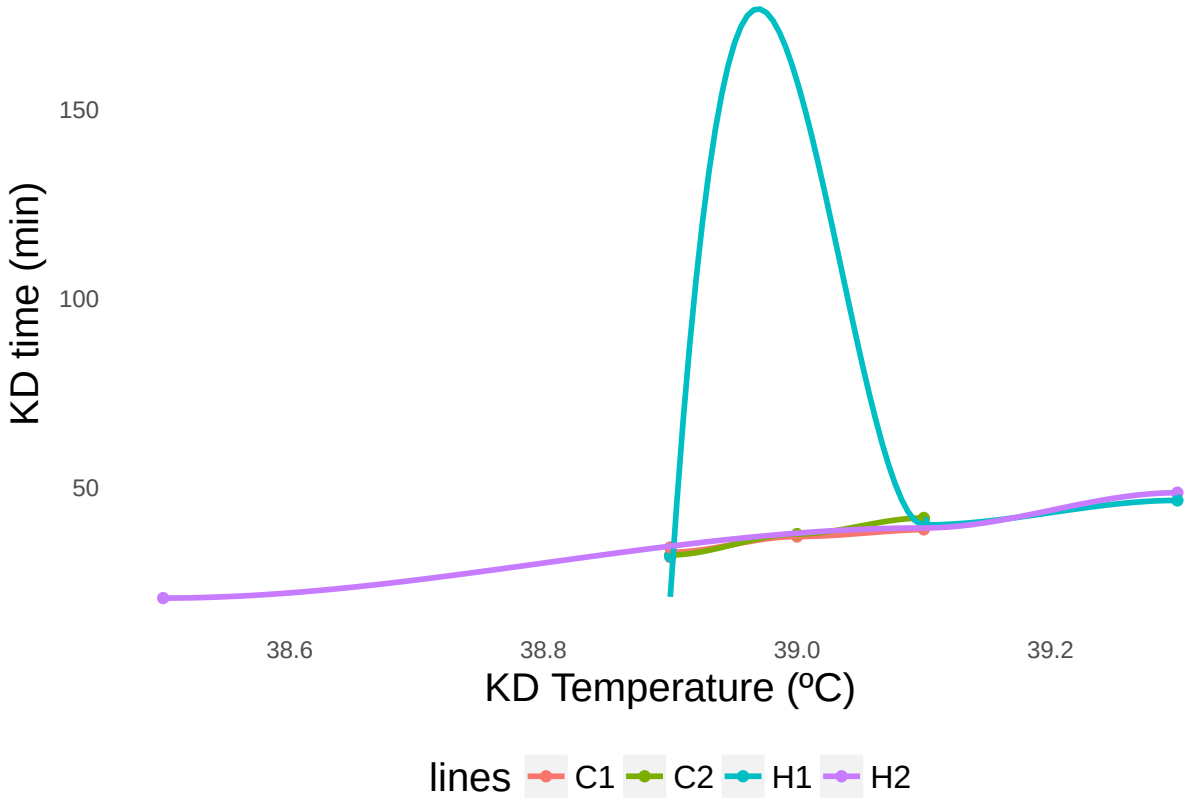
```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 38.899
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.101
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
```

```
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 0.040401

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 38.899

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.101

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 0.010201

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 38.898

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.202

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 0.040804

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 38.496

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 0.604

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 0.041616
```



Session Info

```
sessionInfo()
```

```
## R version 3.5.0 (2018-04-23)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS High Sierra 10.13.5
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
## [1] bindrcpp_0.2.2    data.table_1.11.4 tidyr_0.8.1       ggplot2_2.2.1
## [5] dplyr_0.7.5       lubridate_1.7.4
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_0.12.17     knitr_1.20       bindr_0.1.1      magrittr_1.5
##  [5] munsell_0.4.3    tidyselect_0.2.4 colorspace_1.3-2 R6_2.2.2
##  [9] rlang_0.2.0      plyr_1.8.4       stringr_1.3.1    tools_3.5.0
```

```
## [13] grid_3.5.0       gtable_0.2.0     htmltools_0.3.6  lazyeval_0.2.1
## [17] yaml_2.1.19      rprojroot_1.3-2  digest_0.6.15    assertthat_0.2.0
## [21] tibble_1.4.2     purrr_0.2.5      curl_3.2         glue_1.2.0
## [25] evaluate_0.10.1  rmarkdown_1.9    labeling_0.3     stringi_1.2.2
## [29] compiler_3.5.0   pillar_1.2.3     scales_0.5.0     backports_1.1.2
## [33] pkgconfig_2.0.1
```