MIfuns Sample Script

Parameter Table

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1 Purpose

This script picks up after model.Rnw to process bootstrap results and make a parameter table.

1.1 Package

Listing 1:

```
> getwd()
```

```
[1] "/Users/timb/code/inst/sample/script"
```

Listing 2:

```
> require(MIfuns,lib.loc=' ~ /Rlibs')
```

```
MIfuns 4.3.4
```

2 Parameter Table

Listing 3:

```
> library(Hmisc)
> tab <- wikitab(1005,'../nonmem')
> tab$estimate <- as.character(signif(as.numeric(tab$estimate),3))
> tab$estimate <- with(tab, paste(estimate,'$',justUnits(model),'$'))
> tab$name <- with(tab, nospace(noUnits(lhs(model))))
> tab$root <- signif(sqrt(exp(as.numeric(tab$estimate))-1),3)*100
> needcv <- contains('OMEGA|SIGMA',tab$parameter)
> tab <- within(tab, estimate[needcv] <- paste(estimate[needcv],parens(glue('\\%CV=',root[needcv]))))
> tab$root <- NULL
> #offdiag <- contains('2.1',tab$parameter)
```

```
> #tab$estimate[offdiag] <- text2decimal(tab$estimate[offdiag])
> #omegablock <- text2decimal(tab$estimate[contains('Omega..(1|2)',tab$parameter)])
> #cor <- signif(half(cov2cor(as.matrix(as.halfmatrix(omegablock))))[[2]],3)
> #tab$estimate[offdiag] <- paste(sep='',tab$estimate[offdiag],' (COR=',cor,')')
> tab$model[is.na(tab$model)] <- ''
> boot <- read.csv('../nonmem/1005.boot/log.csv',as.is=TRUE)
> boot <- boot[boot$moment=='estimate',]
> boot <- data.frame(cast(boot,... ~ moment))
> boot[] <- lapply(boot,as.character)
> boot <- boot[contains('THETA|OMEGA|SIGMA',boot$parameter),c('parameter','estimate')]
> boot$estimate <- as.numeric(boot$estimate)
> boot <- data.frame(cast(boot,parameter ~ .,value='estimate',fun=function(x)list(lo=as.character(signif(quantile(x,
    probs=0.05),3)),hi=as.character(signif(quantile(x,probs=0.95),3)))))
> boot$CI <- with(boot, parens(glue(lo,',',hi)))
> tab <- stableMerge(tab,boot[,c('parameter','CI')])
> tab <- within(tab, se <- name <- run <- tool <- parameter <- NULL)
> tab$model <- wiki2latex(noUnits(tab$model))
> tab
```

	description	model
1	apparent oral clearance	$\\mathrm{CL/F \\sim \\theta_{1}\\cdot \\theta_{6}^{MALE}\\cdot (WT/70)^{\\theta_{7}}\\cdot e^{\\eta_{1}}}$
2	central volume of distribution	$\\mathrm{V_{c}/F \\sim \\theta_{2}\\cdot (WT/70)^{1}\\cdot e^{\\eta_{2}}}$
3	absorption rate constant	
4	intercompartmental clearance	
5	peripheral volume of distribution	
6	male effect on clearance	
7	weight effect on clearance	
8	interindividual variability of clearance	
9	interindividual variability of central volume	
10	interindividual variability of Ka	
11	proportional error	

3	$\\mathrm{K_{a} \\sim \\theta_{3}\\cdot e^{\\eta_{3}}}$
4	$\\mathrm{Q/F \\sim \\theta_{4}}$
5	$\\mathrm{V_{p}/F \\sim \\theta_{5}}$
6	$\\mathrm{MALE_{CL/F}\\sim \\theta_{6}}$
7	$\\mathrm{WT_{CL/F}\\sim \\theta_{7}}$
8	$\\mathrm{IIV_{CL/F}\\sim \\Omega_{1.1}}$
9	$\\mathrm{IIV_{V_{c}/F}\\sim \\Omega_{2.2}}$
10	$\\mathrm{IIV_{K_{a}}\\sim \\Omega_{3.3}}$
11	$\\mathrm{err_{prop}\\sim \\Sigma_{1.1}}$

	estimate	prse	CI
1	8.58 $ L/h	$ 9.51	(7.46,9.94)
2	21.6 $ L	$ 9.33	(18.5,25.7)
3	0.0684 $ h^-1	$ 8.04	(0.0602,0.0785)
4	3.78 $ L/h	$ 13.5	(3.01,4.87)
5	107 $ L	$ 15.7	(86.2,149)
6	0.999 $	$ 13.7	(0.775,1.29)
7	1.67 $	$ 21.9	(1,2.35)
8	0.196 $	$ (\\%CV=NA)	23.1 (0.115,0.255)
9	0.129 $	$ (\\%CV=NA)	30.4 (0.0641,0.184)
10	0.107 $	$ (\\%CV=NA)	25.2 (0.0651,0.147)
11	0.0671 $	$ (\\%CV=NA)	11.4 (0.0548,0.0803)

Table 1: Parameter Estimates from Population Pharmacokinetic Model Run 1005

description	model	estimate	prse	CI
apparent oral clearance	$\mathrm{CL/F} \sim \theta_1 \cdot \theta_6^{\mathrm{MALE}} \cdot (\mathrm{WT}/70)^{\theta_7} \cdot \mathrm{e}^{\eta_1}$	8.58 L/h	9.51	(7.46,9.94)
central volume of distribution	$\mathrm{V_c/F} \sim \theta_2 \cdot (\mathrm{WT}/70)^{1} \cdot \mathrm{e}^{\eta_2}$	21.6 L	9.33	(18.5,25.7)
absorption rate constant	$\mathrm{K_a} \sim \theta_3 \cdot \mathrm{e}^{\eta_3}$	0.0684 h^-1	8.04	(0.0602,0.0785)
intercompartmental clearance	$\mathrm{Q/F} \sim \theta_4$	3.78 L/h	13.5	(3.01,4.87)
peripheral volume of distribution	$\mathrm{V_p/F} \sim \theta_5$	107 L	15.7	(86.2,149)
male effect on clearance	$\mathrm{MALE_{CL/F}} \sim \theta_6$	0.999	13.7	(0.775,1.29)
weight effect on clearance	$\mathrm{WT_{CL/F}} \sim \theta_7$	1.67	21.9	(1,2.35)
interindividual variability of clearance	$\mathrm{IIV_{CL/F}} \sim \Omega_{1.1}$	0.196 (%CV=NA)	23.1	(0.115,0.255)
interindividual variability of central volume	$\mathrm{IIV_{V_c/F}} \sim \Omega_{2.2}$	0.129 (%CV=NA)	30.4	(0.0641,0.184)
interindividual variability of Ka	$\mathrm{IIV_{K_a}} \sim \Omega_{3.3}$	0.107 (%CV=NA)	25.2	(0.0651,0.147)
proportional error	$\mathrm{err_{prop}} \sim \Sigma_{1.1}$	0.0671 (%CV=NA)	11.4	(0.0548,0.0803)