

Mlfuns 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 <- wikipar(1005, '../nonmem')
> tab$estimate <- as.character(signif(as.numeric(tab$estimate), 3))
> tab$estimate <- with(tab, paste(estimate, '$', justUnits(model), '$'))
> tab$name <- with(tab, nospaces(noUnits(lhs(model))))
> tab$root <- signif(sqrt(exp(text2decimal(tab$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	
2	central volume of distribution	
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	
1	$\text{CL}/F \sim \theta_1 \cdot \theta_6^{\text{MALE}} \cdot (WT/70)^{\theta_7} \cdot e^{\eta_1}$	
2	$V_c/F \sim \theta_2 \cdot (WT/70)^{\theta_1} \cdot e^{\eta_2}$	

```

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```

	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=46.5)	23.1	(0.115, 0.255)
9	0.129 \$ \$ (\\%CV=37.1)	30.4	(0.0641, 0.184)
10	0.107 \$ \$ (\\%CV=33.6)	25.2	(0.0651, 0.147)
11	0.0671 \$ \$ (\\%CV=26.3)	11.4	(0.0548, 0.0803)

```

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

```

Table 1: Parameter Estimates from Population Pharmacokinetic Model Run 1005

description	model	estimate	prse	CI
apparent oral clearance	$CL/F \sim \theta_1 \cdot \theta_6^{MALE} \cdot (WT/70)^{\theta_7} \cdot e^{\eta_1}$	8.58 L/h	9.51	(7.46,9.94)
central volume of distribution	$V_c/F \sim \theta_2 \cdot (WT/70)^1 \cdot e^{\eta_2}$	21.6 L	9.33	(18.5,25.7)
absorption rate constant	$K_a \sim \theta_3 \cdot e^{\eta_3}$	0.0684 h ⁻¹	8.04	(0.0602,0.0785)
intercompartmental clearance	$Q/F \sim \theta_4$	3.78 L/h	13.5	(3.01,4.87)
peripheral volume of distribution	$V_p/F \sim \theta_5$	107 L	15.7	(86.2,149)
male effect on clearance	$MALE_{CL/F} \sim \theta_6$	0.999	13.7	(0.775,1.29)
weight effect on clearance	$WT_{CL/F} \sim \theta_7$	1.67	21.9	(1,2.35)
interindividual variability of clearance	$IIV_{CL/F} \sim \Omega_{1.1}$	0.196 (%CV=46.5)	23.1	(0.115,0.255)
interindividual variability of central volume	$IIV_{V_c/F} \sim \Omega_{2.2}$	0.129 (%CV=37.1)	30.4	(0.0641,0.184)
interindividual variability of Ka	$IIV_{K_a} \sim \Omega_{3.3}$	0.107 (%CV=33.6)	25.2	(0.0651,0.147)
proportional error	$err_{prop} \sim \Sigma_{1.1}$	0.0671 (%CV=26.3)	11.4	(0.0548,0.0803)