# 安装和加载必要的R包

#install.packages("devtools")

#devtools::install\_github("Hy4m/linKEt", force = TRUE)

#packageVersion("linkET")

#install.packages("FD")

library(dplyr)

library(vegan)

library(linkET)

library(ggplot2)

library(readxl)

library(FD)

# 用于读取Excel文件的包

# 读取相关性矩阵的热图数据

wenv\_data <- read\_excel("chem.xlsx")

# 读取另一个数据

wspe\_data <- read\_excel("spec.xlsx", sheet = "Sheet1")

# 进行Mantel相关性分析

mantel <- mantel\_test(wspe\_data, wenv\_data,

spec\_select = list(**M1 = 1:2,**

**M2 = 3:4**)) %>%

mutate(rd = cut(r, breaks = c(-Inf, 0.2, 0.4, Inf),

labels = c("< 0.2", "0.2 - 0.4", ">= 0.4")),

pd = cut(p, breaks = c(-Inf, 0.01, 0.05, Inf),

labels = c("< 0.01", "0.01 - 0.05", ">= 0.05")))

#write.csv(mantel, file = "mantel\_result\_占比.csv", row.names = FALSE)

# 绘制相关性矩阵的热图和Mantel相关性图 "#D1A846", high = "#2D6021"

R <- qcorrplot(correlate(wenv\_data), type = "lower", diag = FALSE) +

geom\_square() +

geom\_couple(aes(colour = pd, size = rd),

data = mantel,

curvature = nice\_curvature()) +

scale\_fill\_gradient2(low = "#0000FF", high = "#FF0000", limits = c(-1, 1)) +

scale\_size\_manual(values = c(0.5, 1, 2)) +

scale\_colour\_manual(values = color\_pal(3)) +

guides(size = guide\_legend(title = "Mantel's r",

override.aes = list(colour = "grey35"),

order = 2),

colour = guide\_legend(title = "Mantel's p",

override.aes = list(size = 3),

order = 1),

fill = guide\_colorbar(title = "Pearson's r", order = 3))

R

ggsave("模块-mantel\_占比.tiff", R, width = 8, height = 4.75, dpi = 300)

ggsave("模块-mantel\_占比.pdf", R, dpi = 300)