

# Mendelian randomization: Practical 1

Does C-Reactive Protein causally affect Blood Pressure?



The Flatirons



Pearl St Mall



“Ajax” - A Boulder Resident



Hotel St Julien

# Tutors



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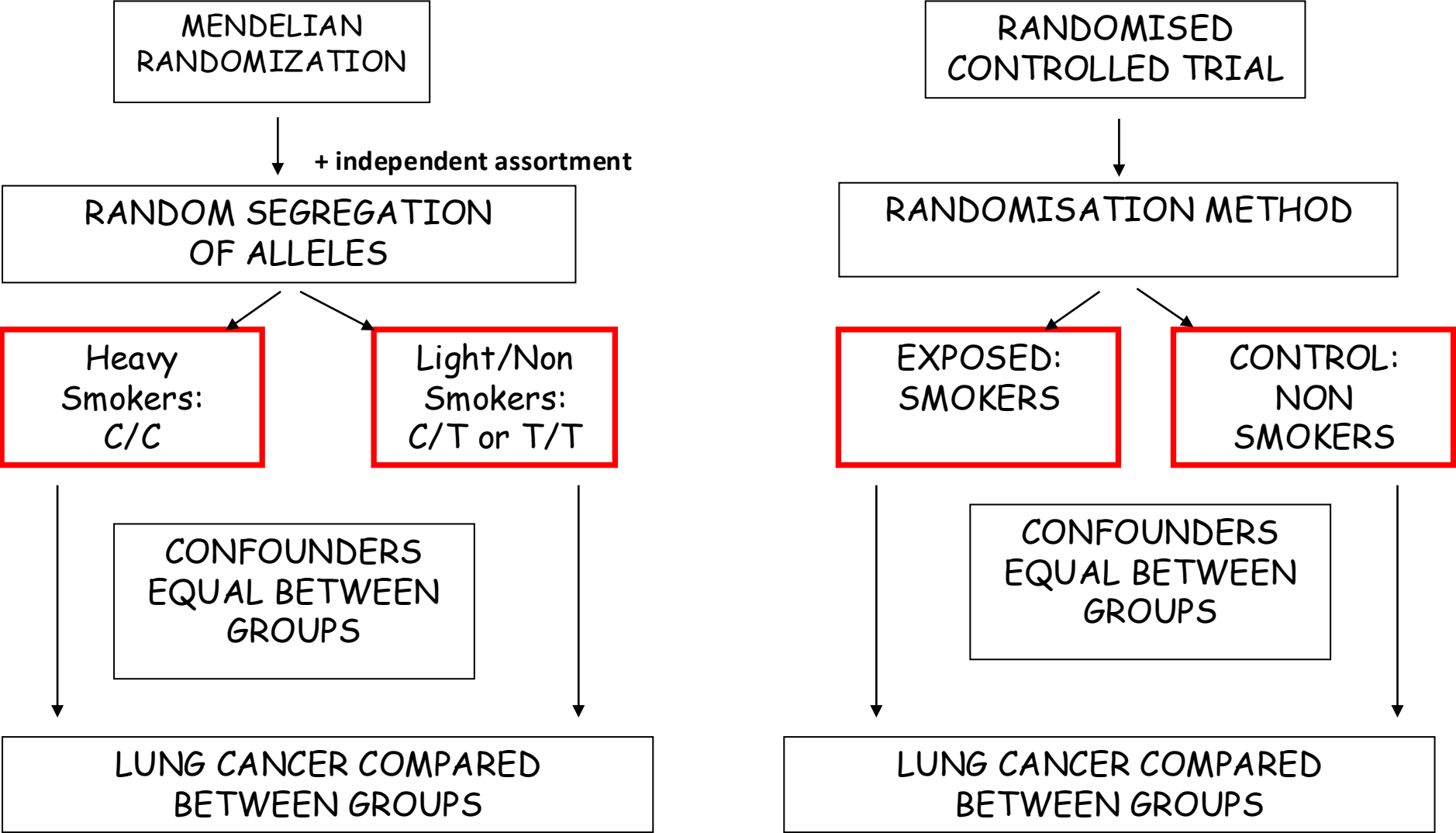
Gunn-Helen Moen  
(University of Oslo)  
(University of Queensland)



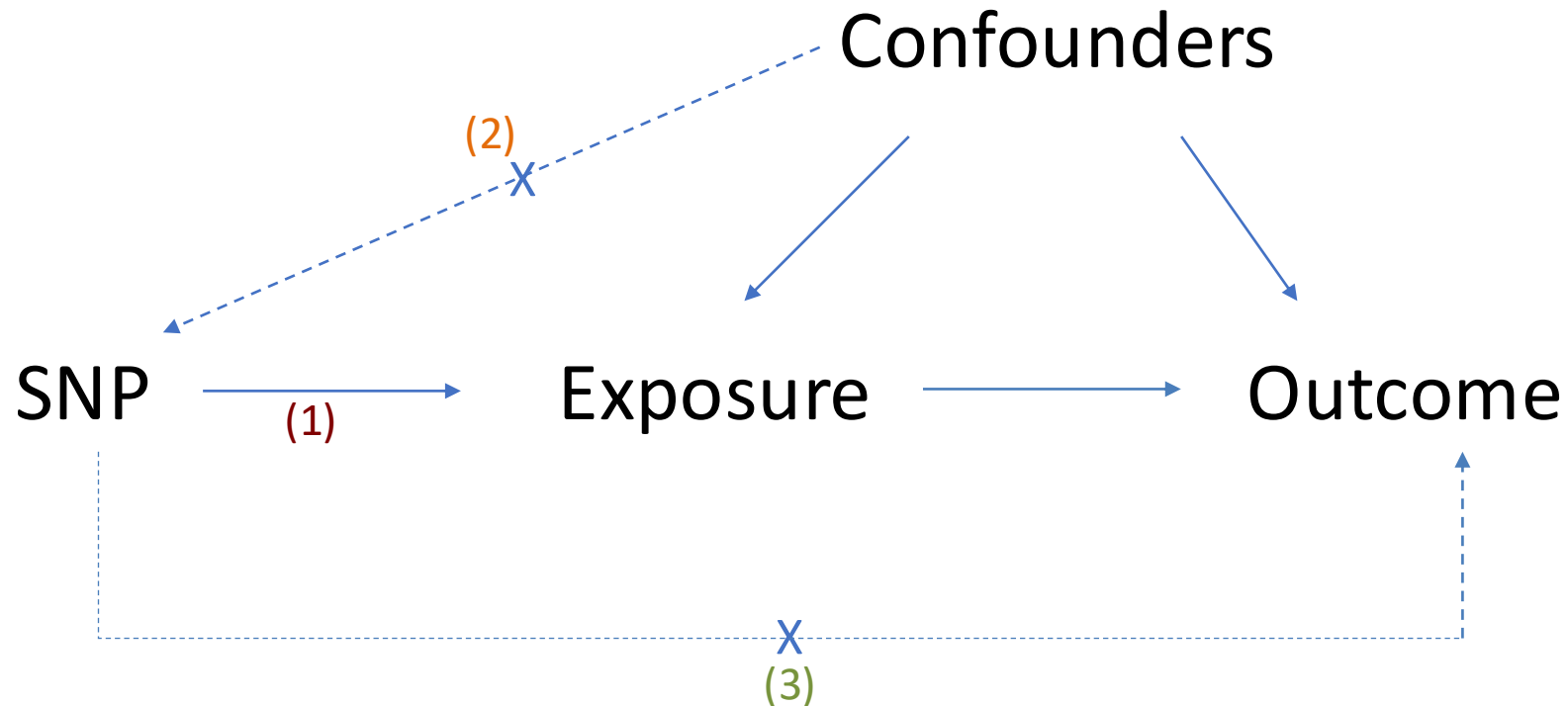
Madhur Singh  
(Kings College London)

Tara Henechowicz  
(University of Colorado)

# Mendelian randomization: Smoking and Lung Cancer



# Mendelian Randomization: 3 Core Assumptions



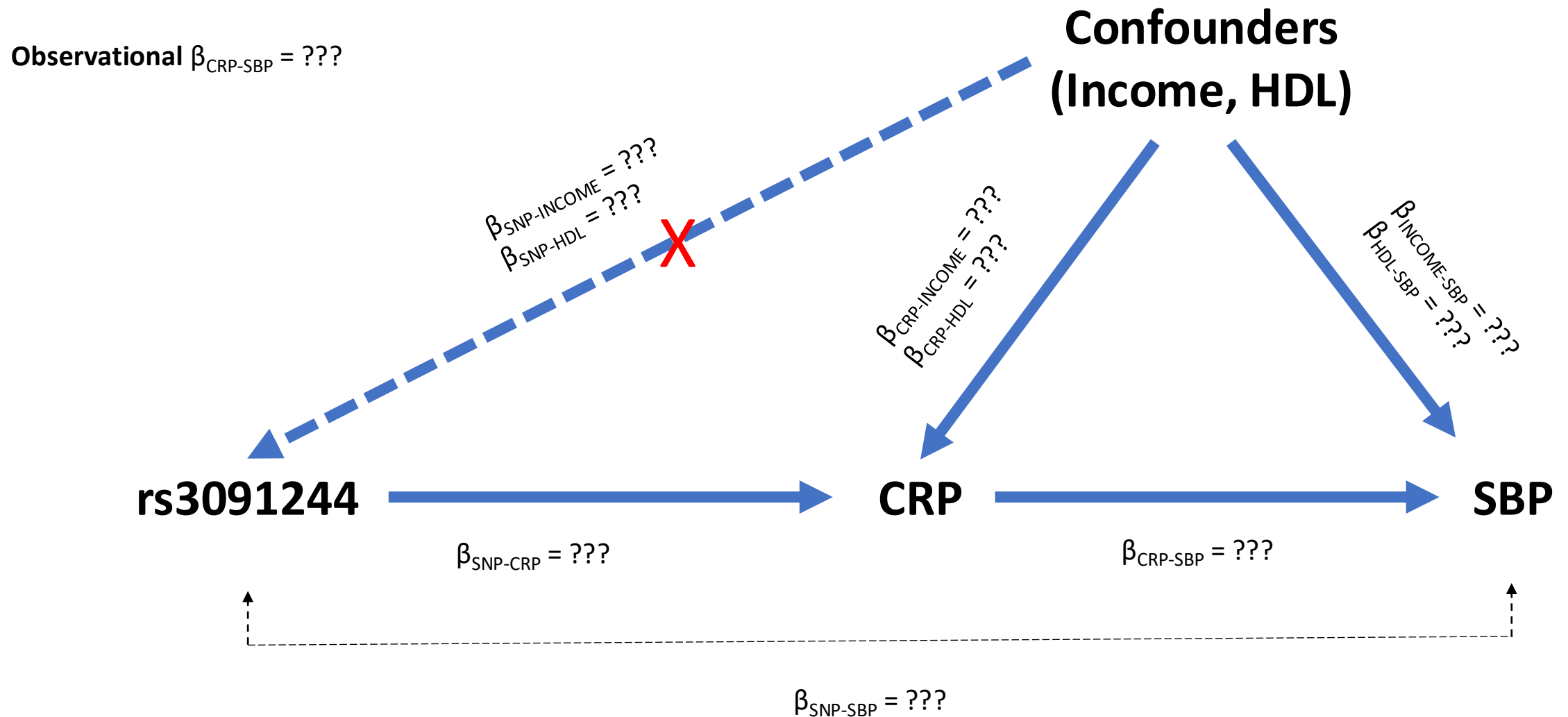
(1) SNP is associated with the exposure

(2) SNP is NOT associated with confounding variables

(3) SNP ONLY associated with outcome through the exposure

# Mendelian randomization: Practical 1

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# Mendelian randomization: Practical 1

# Use your web browser to navigate to: <https://workshop.colorado.edu/>

# Login with your username and password

# Click on the link "OnDemand"

# Click on the R Studio pinned app and start a session

# Click on the "terminal" tab. This will take you to a UNIX like environment where you can copy the files over for this session's practical exercise

# Now go to your home directory, create a new working directory called "MR", and move to it

```
cd
```

```
mkdir MR
```

```
cd MR
```

# Copy the PRACTICAL1 directory from David Evans' Faculty drive into this directory

```
cp -r /faculty/davide/BOULDER2026/PRACTICAL1 .
```

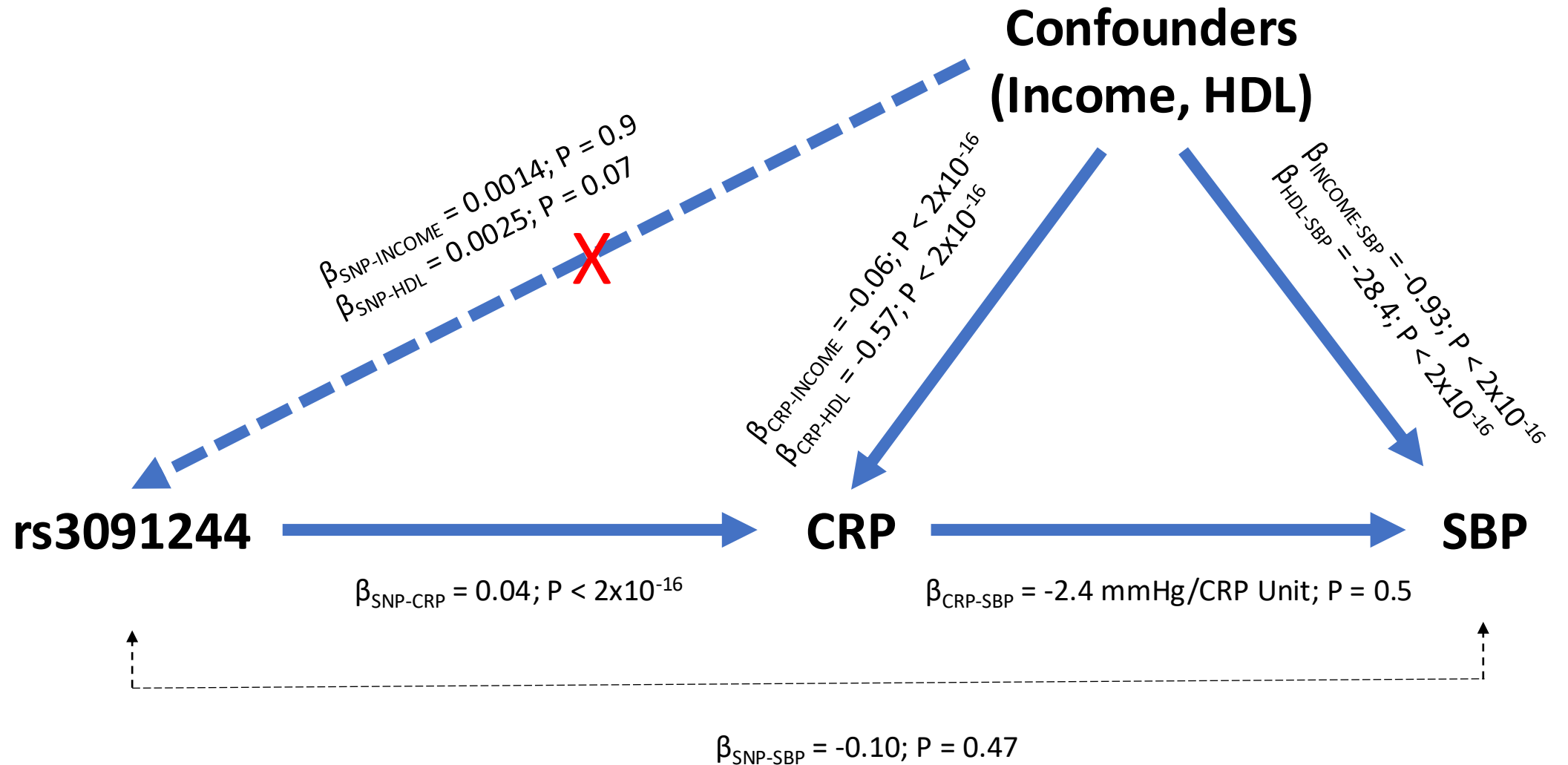
# Move into your newly created PRACTICAL1 directory and print the working directory here

```
cd PRACTICAL1
```

```
pwd
```

# You should be able to navigate to your home directory using the point and click windows style directory in the lower right hand half of the R studio server (under the files tab). Download the file Mendelian\_Randomization\_Practical\_Exercise\_QUESTIONS.doc onto your local machine. # This file contains all the instructions for the practical. Open the file and complete the practical.

Observational  $\beta_{\text{CRP-SBP}} = 19.1 \text{ mmHg/CRP Unit}; P < 2 \times 10^{-16}$



# Responsible Conduct of Research Question

- What should PRS's be used for? Clinical risk prediction; lifestyle choices; preventative medical intervention; insurance assessment; how about educational attainment prediction and assignment to school programs; prenatal testing and embryo selection; partner choice? Discuss!