Study Overview

**Discovery Phase**

- **Stage I:**
  - MGH-Boston Cohort
  - Caucasian
  - 417 ARDS cases (127 with pulmonary injury and 291 with pulmonary injury)
  - 1,300 control (549 with extrapulmonary injury and 751 with pulmonary injury)
  - IBC Chip; Illumina®, 29,483 SNP after QC
  - Age, gender, APACHE III

- **Stage II (Population I):**
  - UW Cohort Caucasian
  - Trauma
  - 597 ALI cases 168 no ALI Illumina 610Quad Age, ISS, APACHE II

- **Stage II (Population II):**
  - ARDSnet/MGH Cohort Caucasian
  - Pneumonia/pulmonary sepsis
  - 392 ARDS cases 446 no ARDS Illumina 610Quad Age, gender, top 6 principal components

**Validation Phase**

- **Stage II**
  - SNPs associated with extrapulmonary injury-related ARDS (p ≤ 5E-04)
    - n = 8
  - SNPs associated with pulmonary injury-related ARDS (p ≤ 5E-04)
    - n = 17

- **Stage III:**
  - Penn Cohort Caucasian
  - Trauma
  - 74 ALI cases 150 no ALI Illumina 610Quad Age, ISS, APACHE III, blunt trauma, pRBC.

- SNP rs324420 (FAAH gene) replicated its association with ALI in Stage II and Stage III (p ≤ 0.05)

- SNP rs1190286 in POPODC3 gene replicated its association with ARDS in Stage II (p ≤ 0.003 (0.05/17))

---

**Filtering criteria**: SNPs replicating its association with ALI in Stage II (p ≤ 0.007 (0.05/8))

**n = 1**

---

**Figure S1**