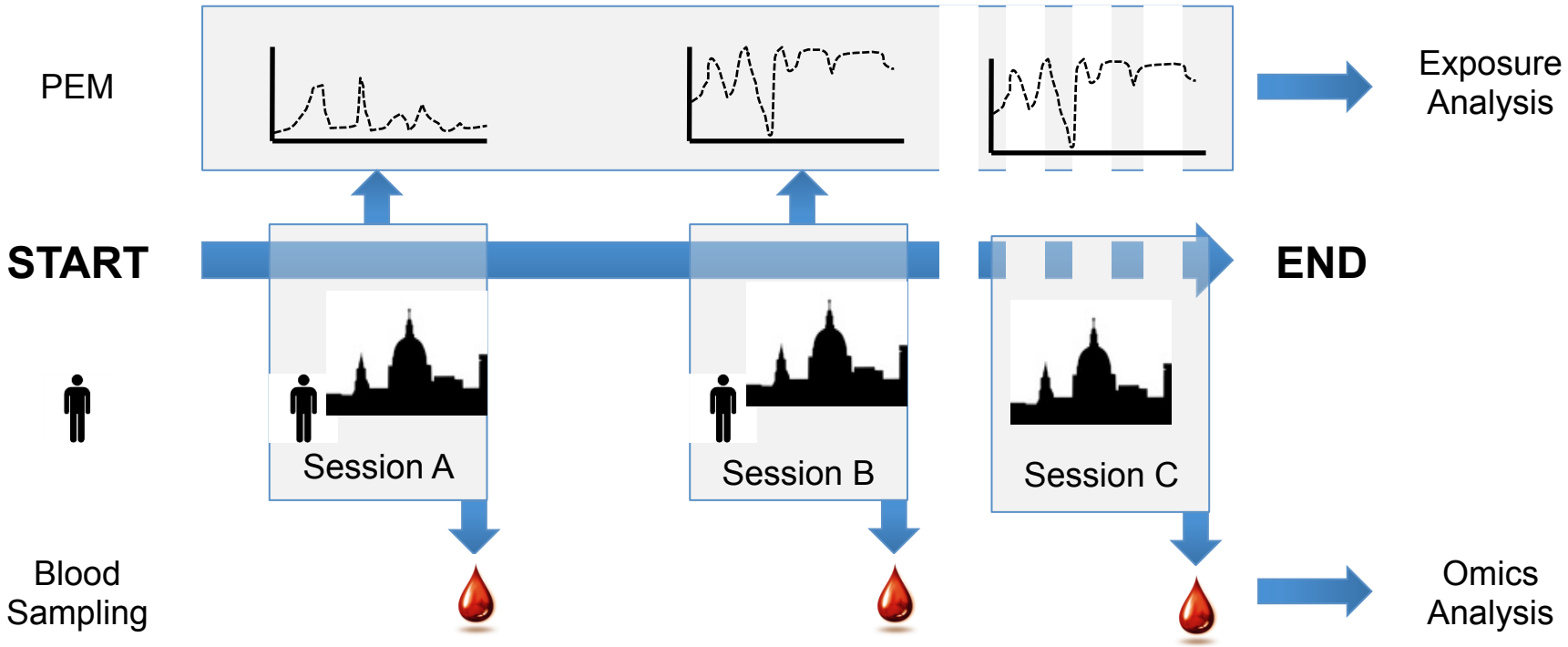
Personal Exposure Monitoring (PEM) study

Outline

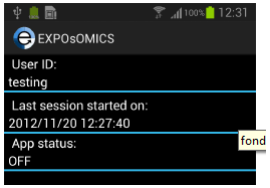
- Healty volunteers experiencing high and low levels of air pollution
- Personal measurements made during 24hr exposure periods
- Blood samples obtained for omics after each exposure period



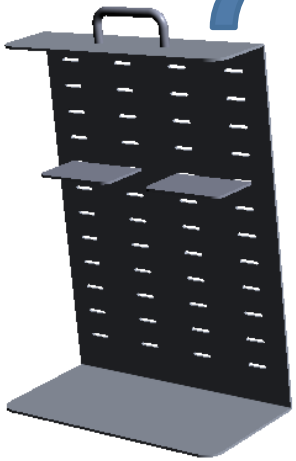
Sensor tubes/inlets fitted to shoulder straps

Separate GPS & accelerometer (used for validation of data from the phone)

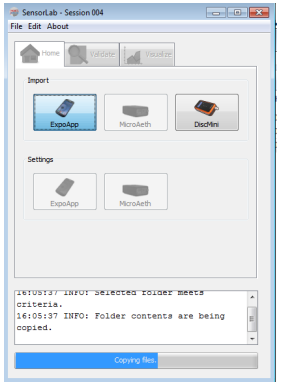
Bespoke phone application (GPS, accelerometer)



Bespoke rack inside backpack to hold sensors and batteries



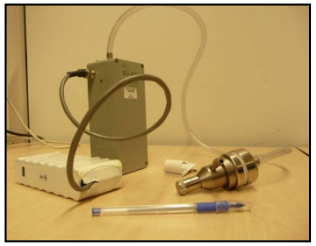
Bespoke software to process data from sensors



Battery support for sensors

PM2.5 pump/ cyclone

UFP DISCmini



SD card

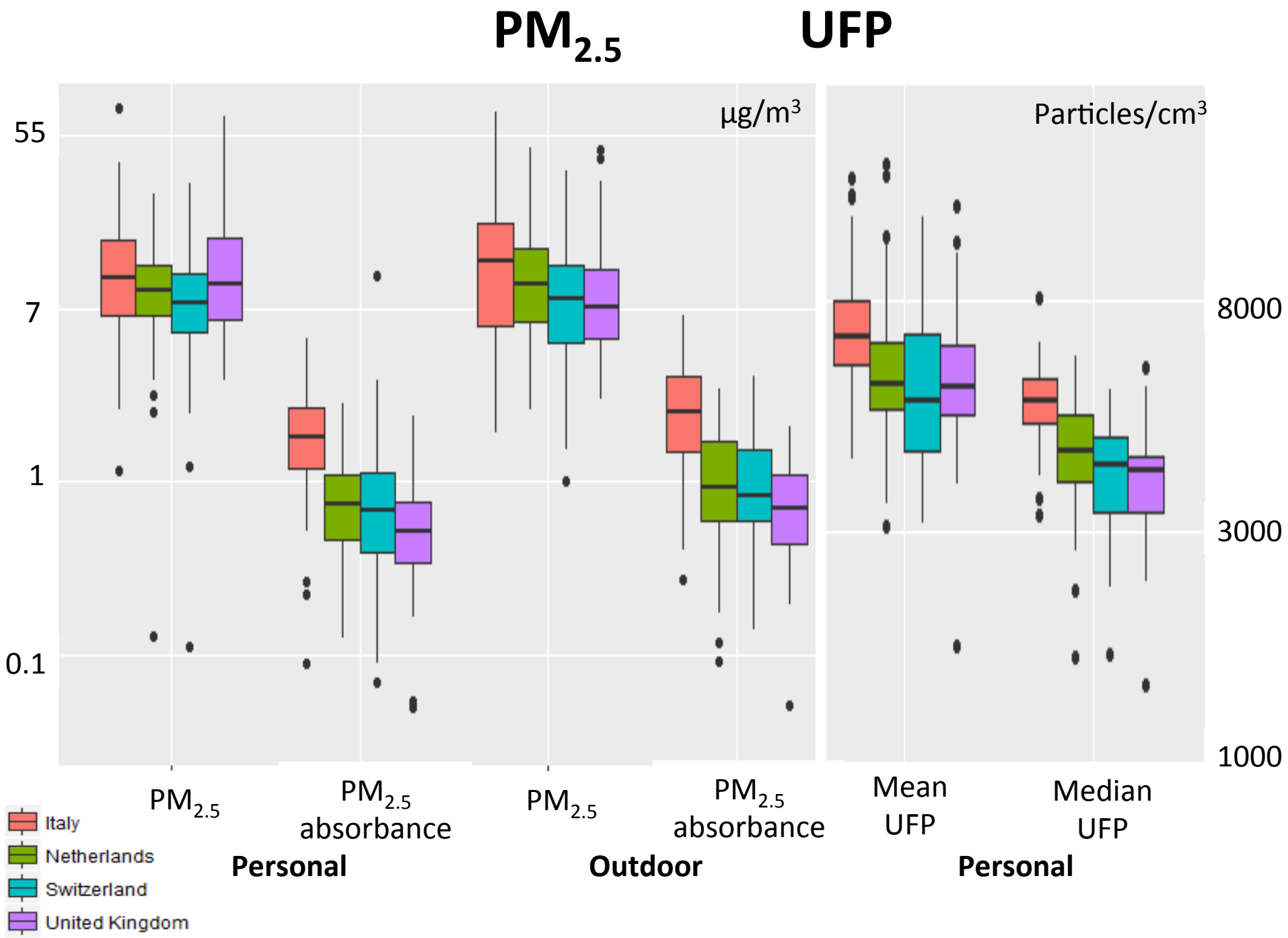
PM2.5 mass and soot

Filter analysis

PROCESSED DATA

Air pollution exposure assessment

1. Personal exposure measurements
2. Measurements in front of residence -> comparable to modeled estimates used in cohort studies
3. Modeled exposure estimates
    - PM2.5 + absorbance
    - Ultrafine particles


PM2.5
UFP
µg/m3
Particles/cm3
55
7
1
0.1
8000
3000
1000
PM2.5
PM2.5 absorbance
PM2.5
PM2.5 absorbance
Mean UFP
Median UFP
Personal
Outdoor
Personal
Italy
Netherlands
Switzerland
United Kingdom

PEM study population

Total (N)	IT (85)	NL (81)	CH (92)	UK (43)	Pooled (301)
Session (N)					
A	43	41	48	23	155
B	42	40	44	20	146
Sex (N)					
Female	22	34	25	15	96
Male	21	7	23	8	59
Highest achieved Education (N)					
Primary school	0	0	0	0	0
High school	30	7	4	11	25
university	13	34	44	12	103
Median Age (years)	60	62	60	63	61
Median BMI (Kg/m^2)	24.8	24.6	25.1	26.8	25

OMICS markers assessed