

GENE EXPRESSION ANALYSIS

LUNG CANCER

Kajsa Møllersen

2017

- The Norwegian Women and Cancer cohort study.
- 1991: Oral contraceptives - questionnaires
- 2003: Whole-genome expression by microarrays in peripheral blood cells
- At present:
 - 170 000 women aged 30-70 years at recruitment
 - 50 000 blood samples
 - Diet, smoking, parity, cosmetics, sun bathing,
 - Breast tissue, blood drawn at hospital, ...

- Cancer Registry of Norway
- The Norwegian Central Person Register
-
- Unique 11-digit personal number

- Case-control prospective
- Matched on age and year of sampling
- Blood sampled 1-7 years before diagnosis
- Metastasis status
- Smoking habits from questionnaire
- Gene expression
- Methylation

- 268 women
- 8 were lost in the lab
- 12 pooled samples for quality control
 - Mix of 10 healthy women

ILLUMINA BEAD CHIP

- 47 000 unique probes
- 15-45 replicates for each probe
- 770 negative controls
- a few positive controls

- Trimmed median and standard deviation for each probe
- Negative probes
 - Estimate independent noise
 - Detect non-expressed probes

- Outlier detection and removal
- Noise estimation: Cross-hybridization

- Researcher's degrees of freedom
- Multiple testing
- Use exploratory tools to do exploratory research!