Computational Genomics

Week10

Clonality analysis

Purity and Clonality

- Purity: the proportion of cancer cells in the admixture of the tumor microenvironment.
- Clonality: the proportion of clonal cells in the admixture. In the context of cancer, it is often the population of cancer clonal cells that is of interest.

Purity and Clonality

- Example:
  - The admixture contains 10 cells, of which 6 are cancer cells, and 4 are subclonal cancer cells.

  - Purity = ?
  - Clonality = ?

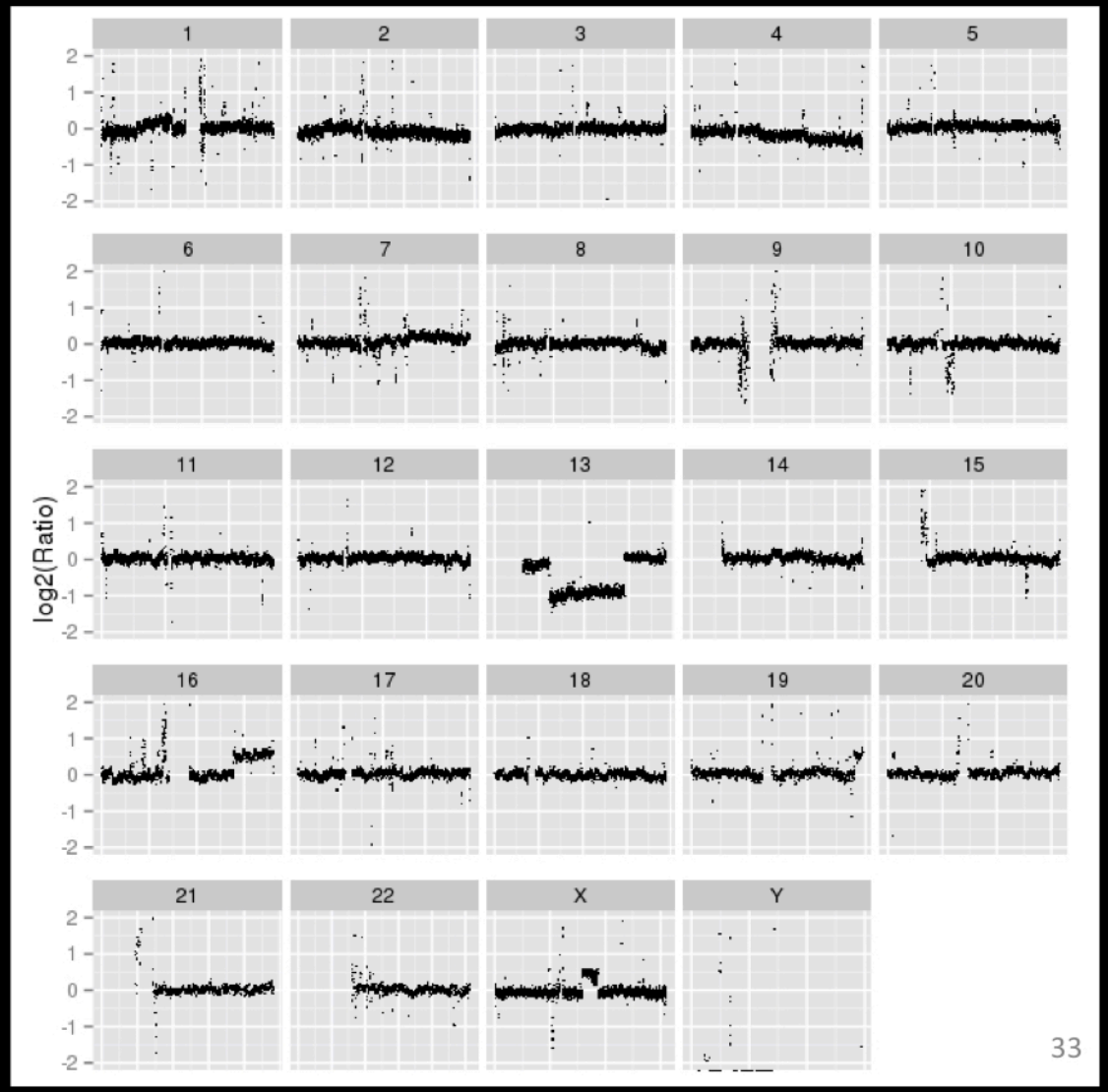
Purity and Clonality

- Example:
  - The admixture contains 10 cells, of which 6 are cancer cells, and 4 are subclonal cancer cells.

  - Purity = 60%
  - Clonality = 40%

Example of CNV detection with sequencing read depth

Read depth signal of 50k bins of low-coverage whole genome sequencing data – a tumour sample



ControlFreec calls 303 CNVs. For example:

13	36650000	63600000	1	loss
13	63600000	63650000	4	gain
13	63650000	87300000	1	loss

Or

16	69450000	90354753	3	gain

And many small gains.

No events on chr4.

$2^{(-1)} = \frac{1}{2}$ $2^{0.58} = \frac{3}{2}$

$2^{0} = \frac{2}{2}$ $2^{(1)} = \frac{4}{2}$

Discuss the CNVs for:

- chrX
- chr7
- chr4

What are the differences?

Do they all have integer copy numbers? If not, why?