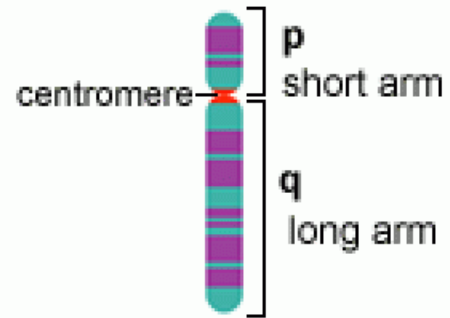


# Tips and tricks for recognition of G-banded chromosomes

Slide deck originally provided by Teresa Smolarek

## Short and Long Arms of a Chromosome



Metacentric chromosomes have a centromere in the centre, such that both chromosome arms are of equal length. Human chromosomes 1 and 3 are metacentric.



Chromosome 3



Chromosome 4



Chromosome 13

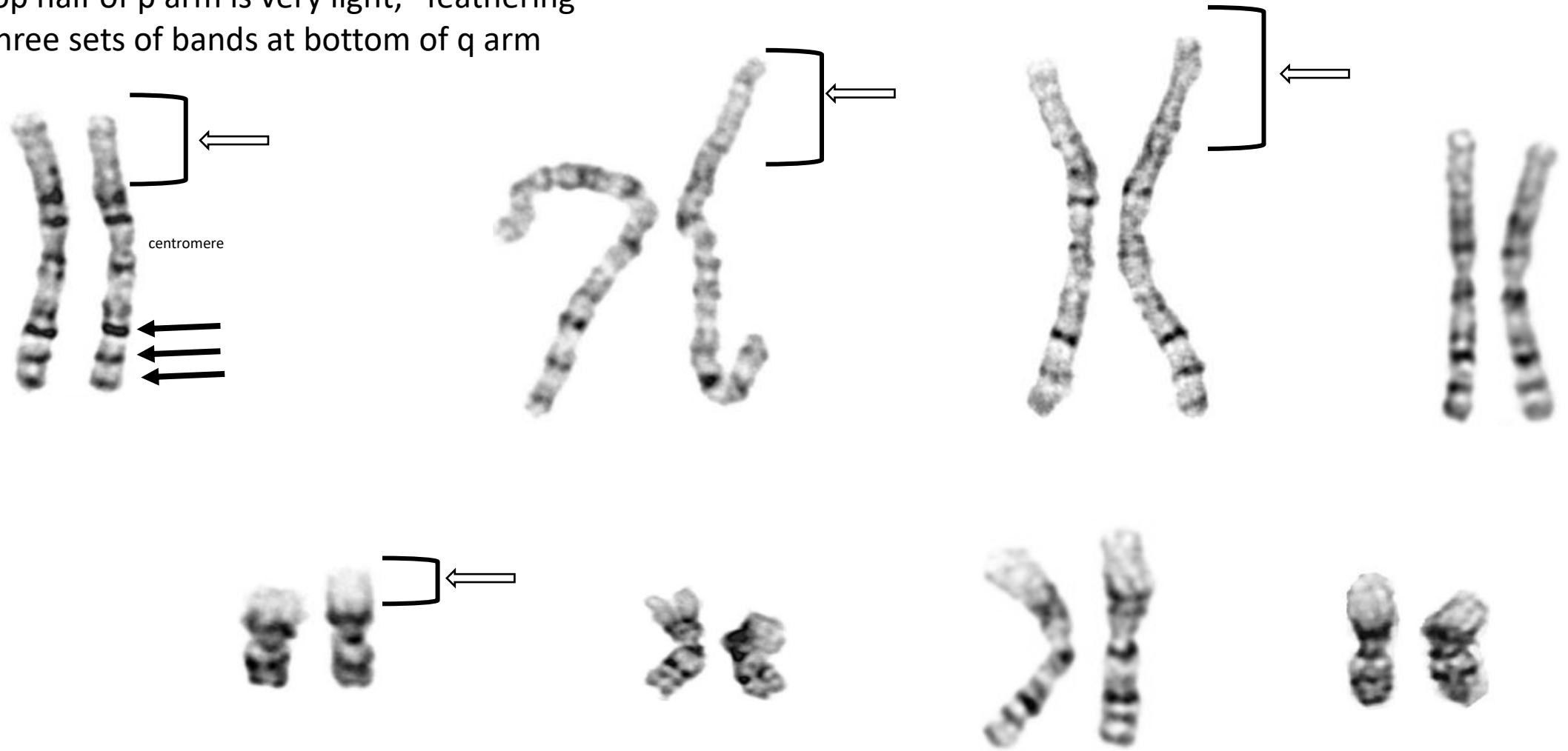
Submetacentric chromosomes have a centromere slightly offset from the centre leading to a slight asymmetry in the length of the two sections. Human chromosomes 2, 4-12, 17, 18 and X are submetacentric.

Acrocentric chromosomes have a centromere which is considerably offset from the centre, leading to a long q arm and short p arm. Human chromosomes 13, 14, 15, 21, 22 and Y are acrocentric.

## Chromosome 1

Top half of p arm is very light; "feathering"

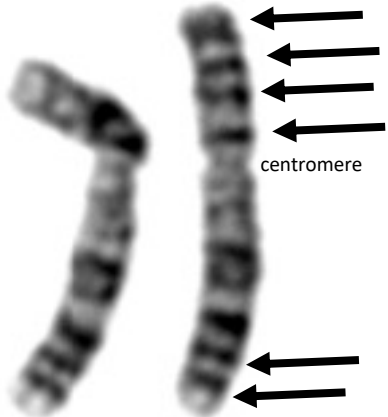
Three sets of bands at bottom of q arm



## Chromosome 2

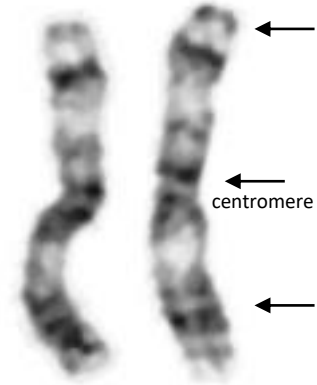
four dark bands in p arm;

2 dark parallel bands near bottom of q arm



## Chromosome 3

Clearly contrasted light and dark regions, dark at centromere; dark cap at top



## Chromosome 4

white fluff distal p arm; long q arm beginning with dark band just below centromere “shoulder pads”



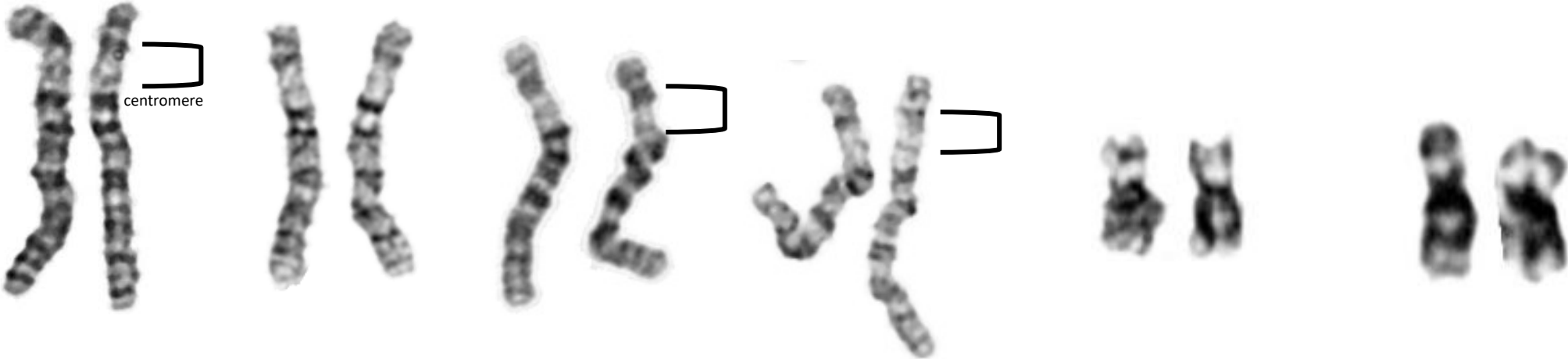
## Chromosome 5

One dark band near center of p arm; long q arm with light region just below centromere; three dark bands in middle q arm; 2 dark bands near q telomere



# Chromosome 6

p arm looks like a “lighthouse” with large light region in the middle





## Chromosome 7

“top hat”; very distinct dark band at top of p arm;  
Three sets of bands in q arm



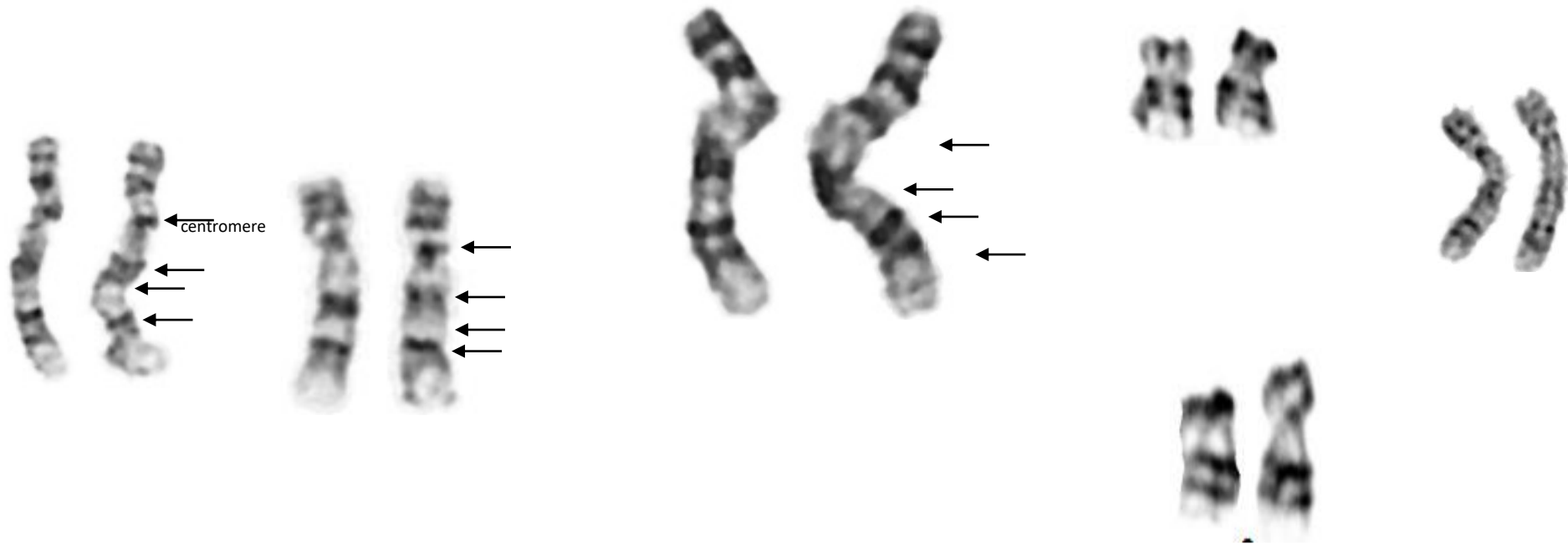
# Chromosome 8

p arm is muted with two dark bands sometimes visible;  
q arm has a distinct dark band near bottom



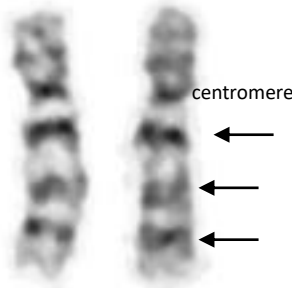
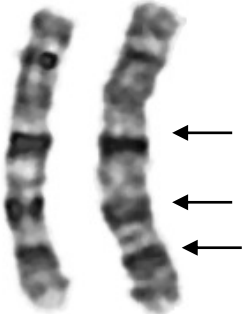
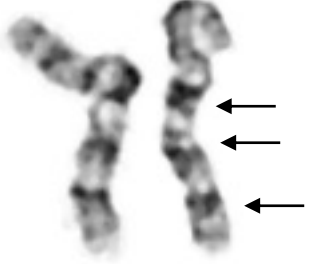
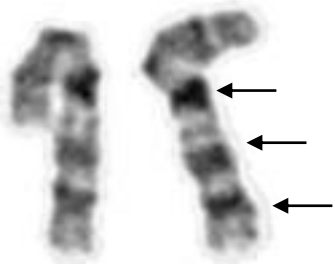
## Chromosome 9

q arm has 2 sets of black bands; light area (heterochromatin of varying size) from centromere to first dark band; typically a dark stained centromere



# Chromosome 10

q arm has three sets of dark bands



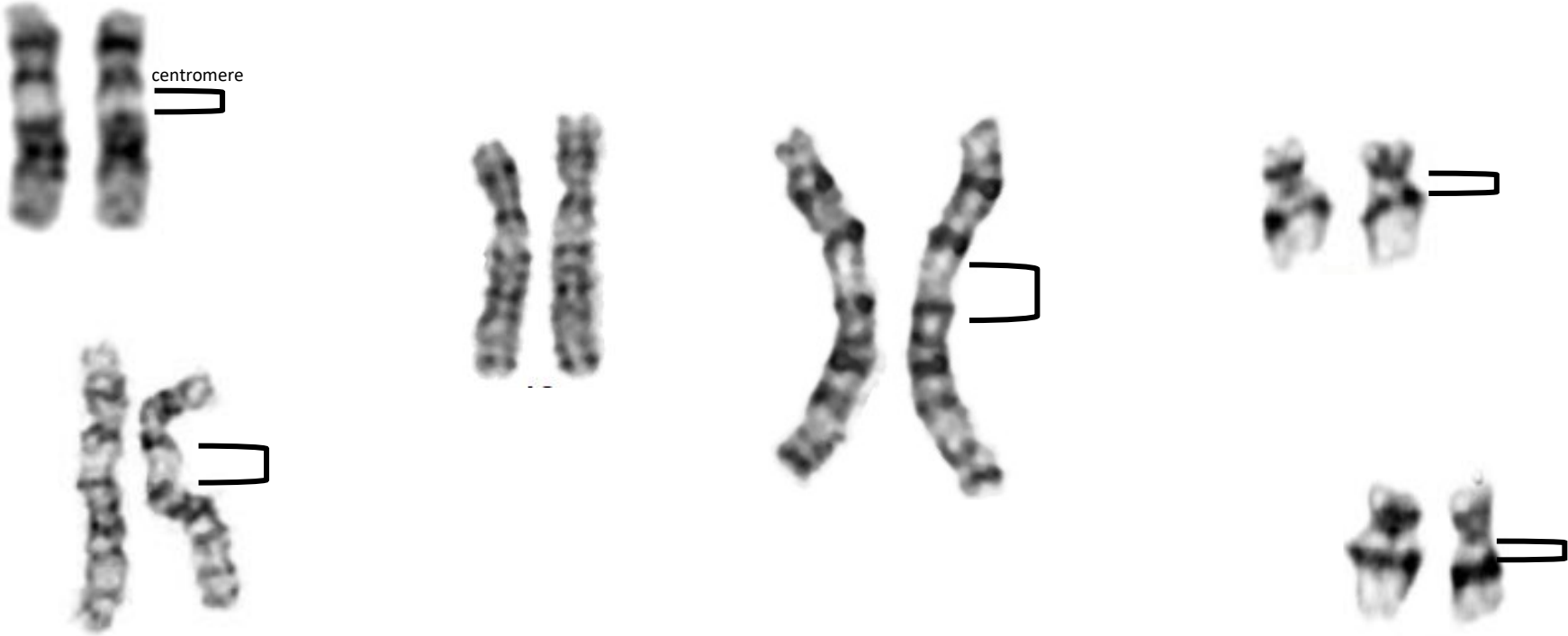
# Chromosome 11

Larger p arm than chromosome 12; q-arm has wide white area under centromere; dark bands slightly towards bottom of q arm

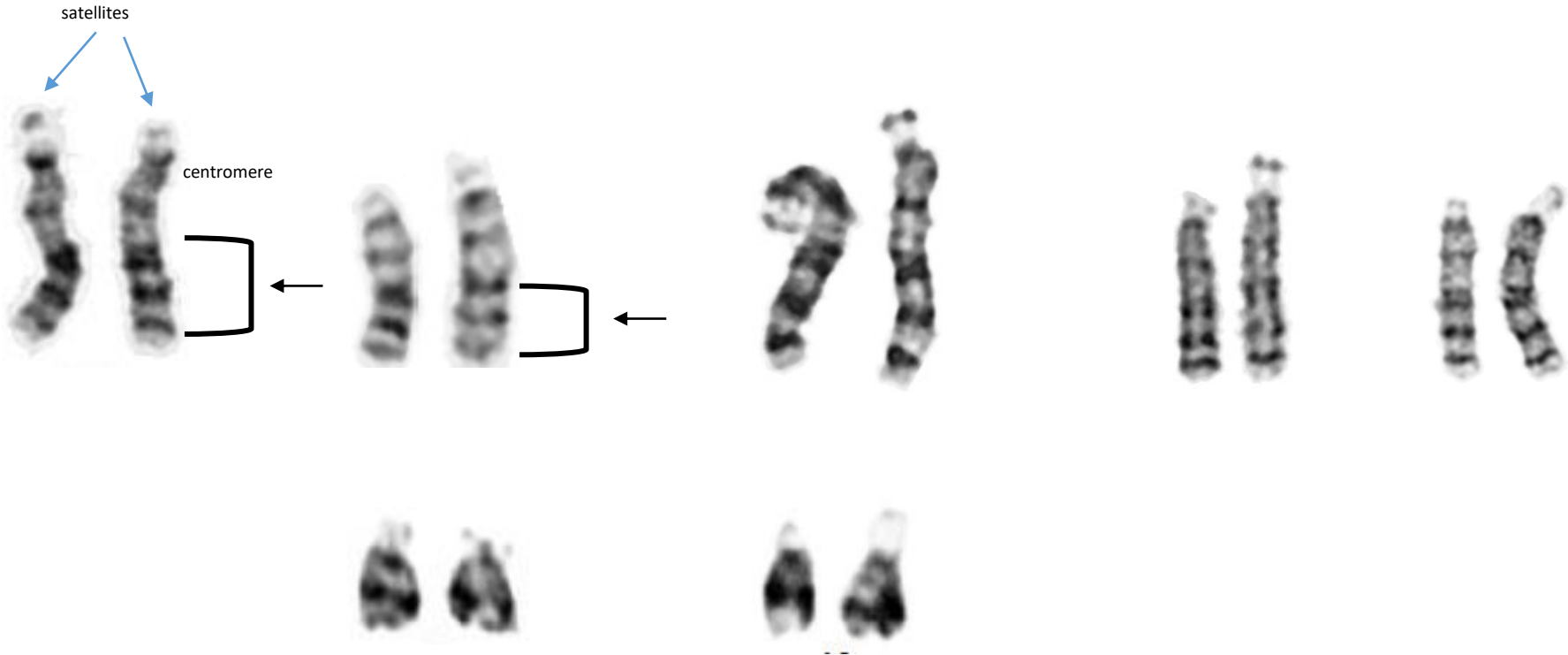


# Chromosome 12

Smaller p arm than chromosome 11; q arm has thin white area under centromere; dark bands near center of q arm

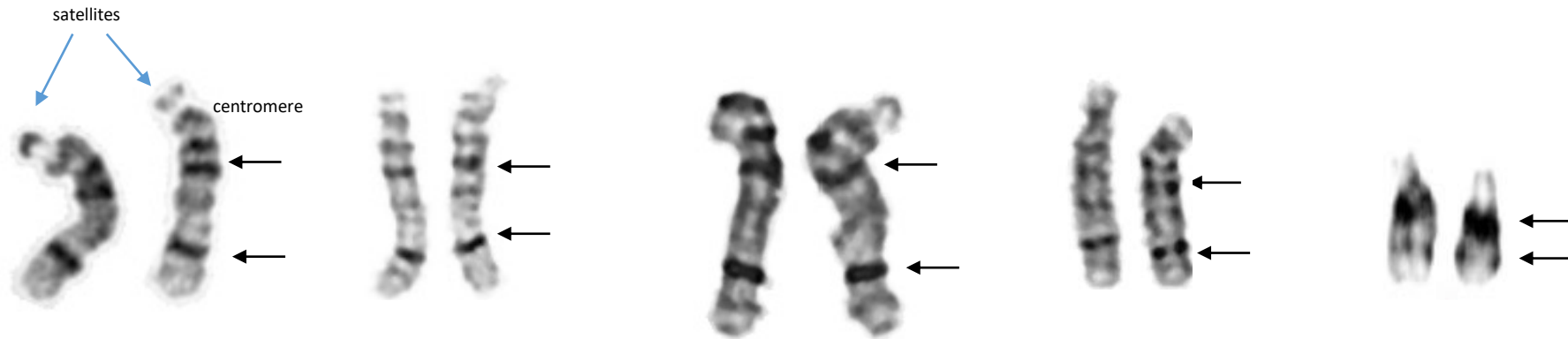


Chromosome 13 acrocentric  
dark bands near bottom of q arm



## Chromosome 14 acrocentric

q-arm has dark area near centromere, and a dark band very near the bottom





## Chromosome 15 acrocentric

q arm has dark areas closer to centromere; lighter areas toward bottom



## Chromosome 16

particularly dark centromere (heterochromatin of varying size) with 2 dark bands below it



## Chromosome 17

dark centromere; light area in the middle of q-arm with dark bands at bottom



## Chromosome 18

“gummy bear” small p arm; two sets of dark bands in the q arm



## Chromosome 19

“bow tie” very dark centromere with light p and q arms



# Chromosome 20

dark centromere, p arm one dark band; q arm has 2 bands



Chromosome 21 acrocentric  
dark centromere with darkness extending into the q-arm



Chromosome 22 acrocentric

dark centromere; light q arm with a band in the middle





## X Chromosome

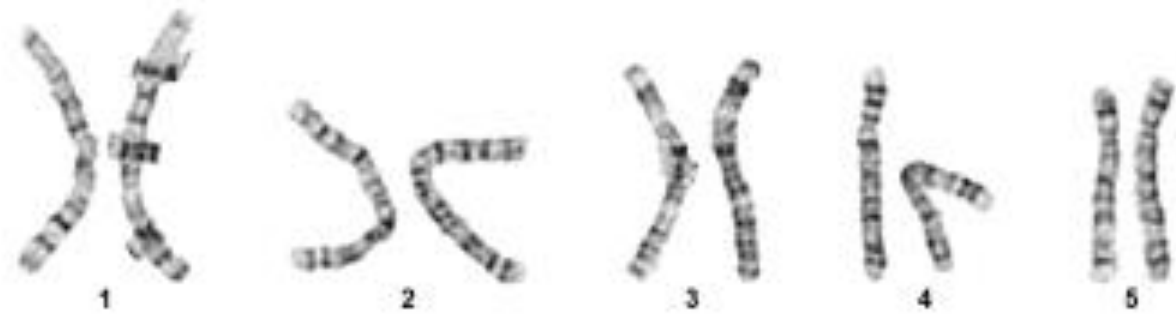
very dark band in the middle of p arm and beneath the centromere in the q arm



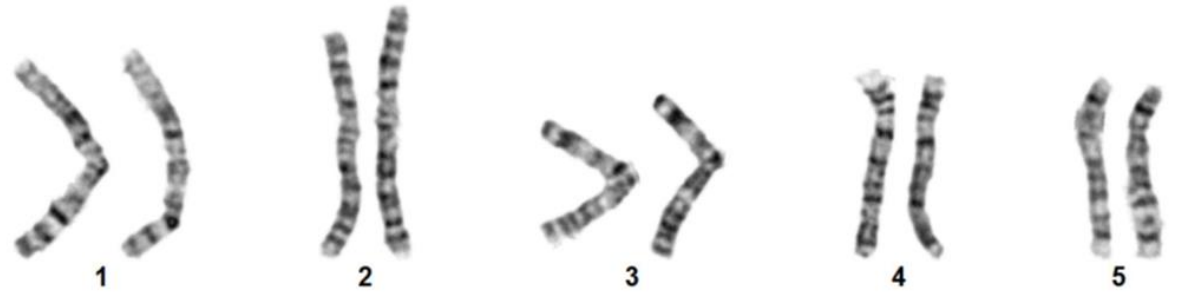
Y Chromosome acrocentric

very small, dark staining, not much shape, "no hips"





46,XX



46,XY