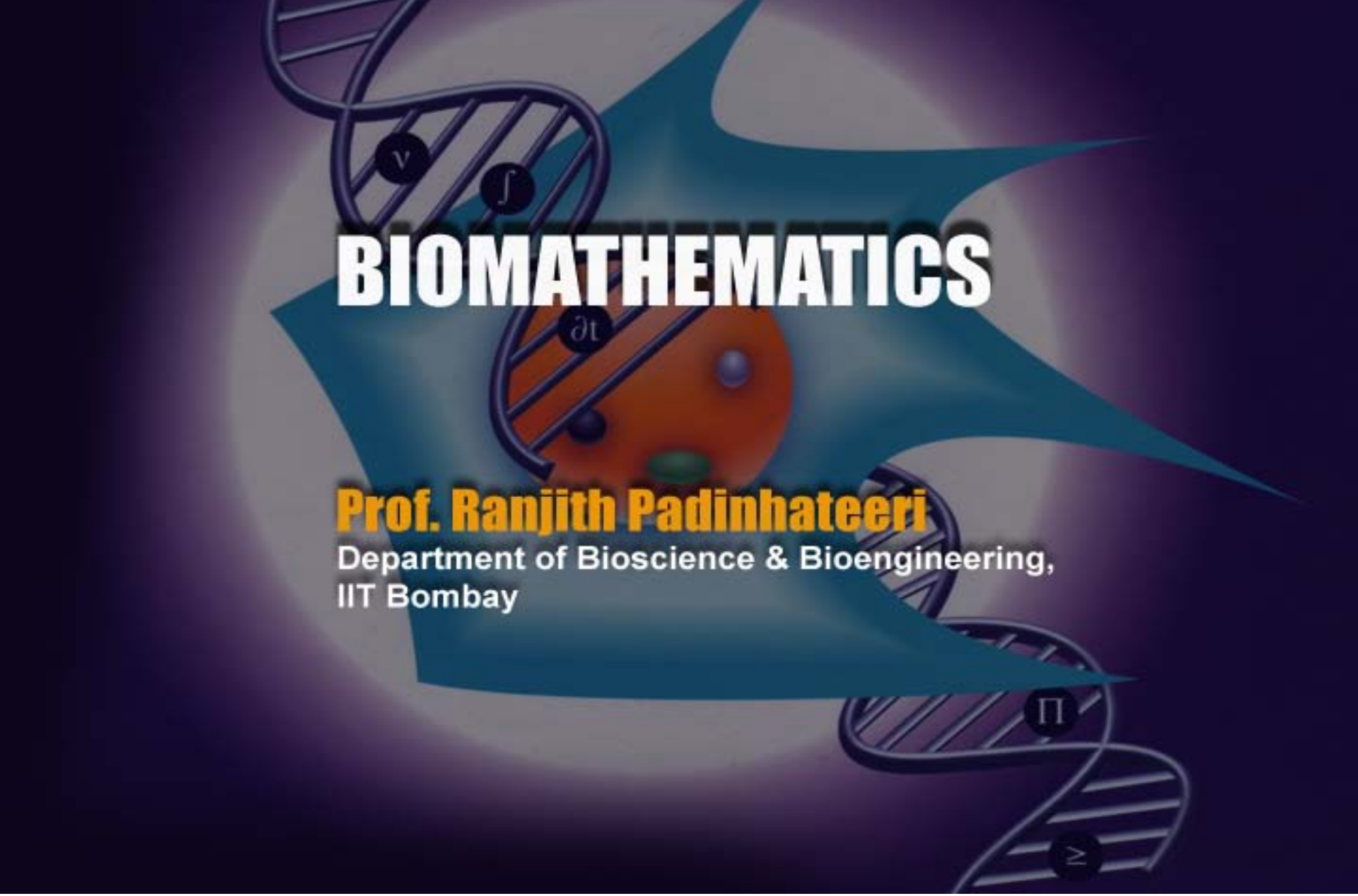
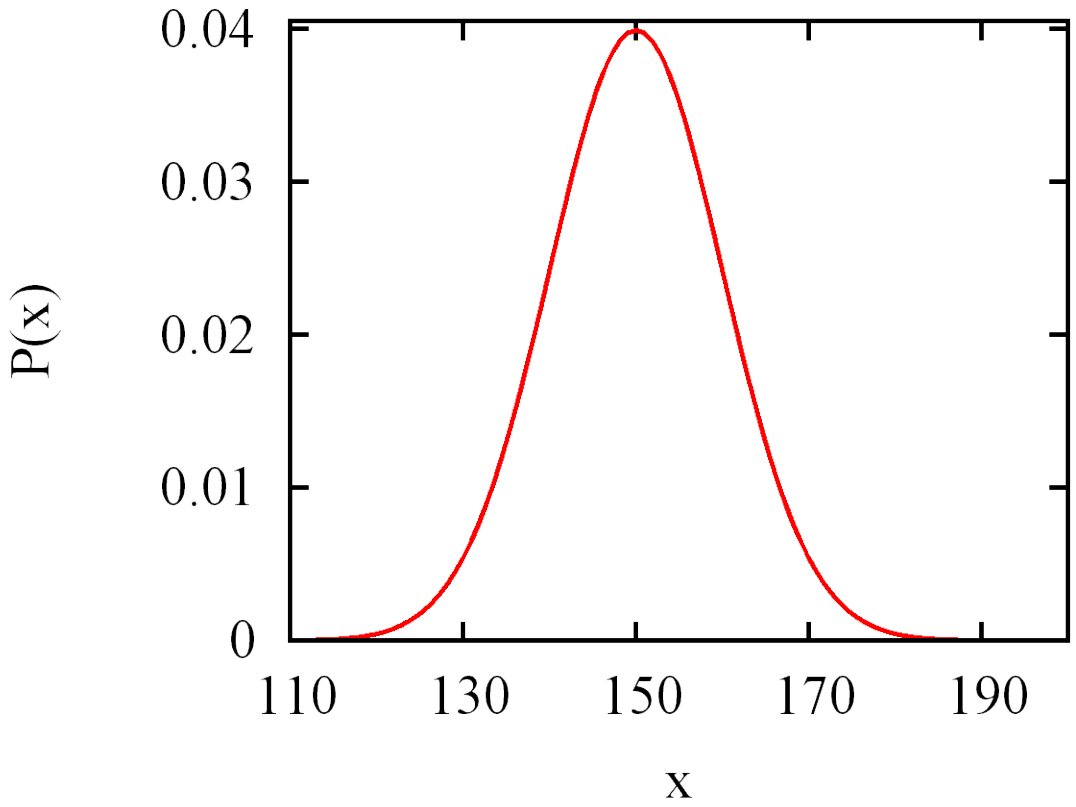

BIOMATHEMATICS
Prof. Ranjith Padinhateeri
Department of Bioscience & Bioengineering,
IIT Bombay

Lecture 23

Statistics

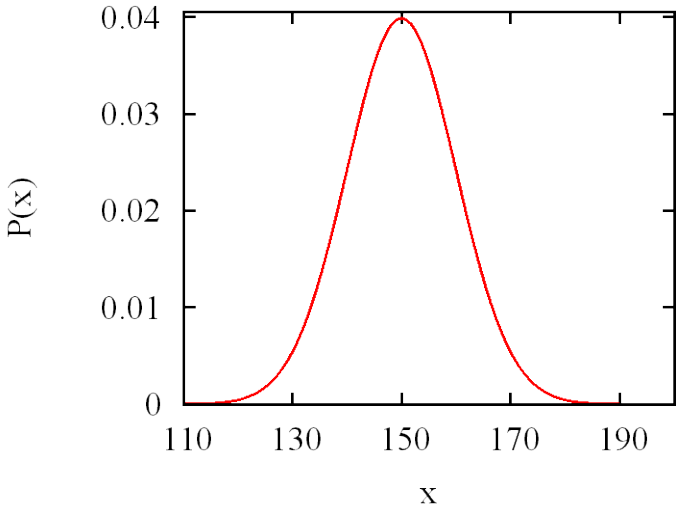
Understanding Normal distribution

What you know from first look ?



Can you tell…

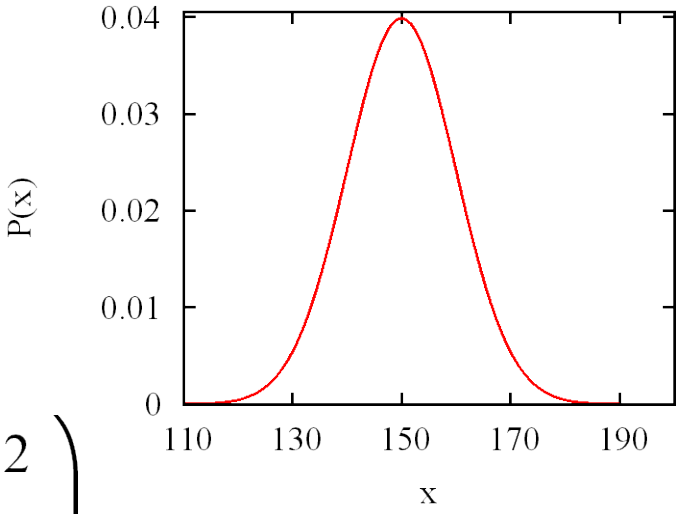
What is the average ?



What is the standard deviation ?

Gaussian function

$$P(x) = A\exp\left(-bx^2\right)$$



$$P(x) = \frac{1}{2\pi\sigma^2}\exp\left(-\frac{(x-x_0)^2}{2\sigma^2}\right)$$

Why this this particular A and b ?

Gaussian function

$$P(x) = A\exp\left(-bx^2\right)$$

How do we find A ?

Gaussian function

$$\langle x \rangle = \int_{-\infty}^{+\infty} xP(x)dx = 0$$

$$\langle x^2 \rangle = \int_{-\infty}^{+\infty} x^2 P(x)dx = \frac{1}{2b}$$

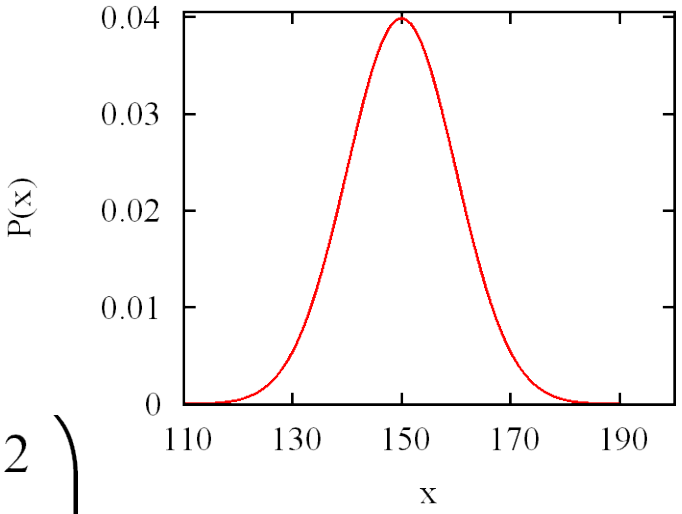
Gaussian function

$$P(x) = A\exp\left(-bx^2\right)$$

Standard deviation $\sigma = \sqrt{\langle x^2 \rangle - \langle x \rangle^2}$

Gaussian function

$$P(x) = A\exp\left(-bx^2\right)$$



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