SVM – The Kernel Trick

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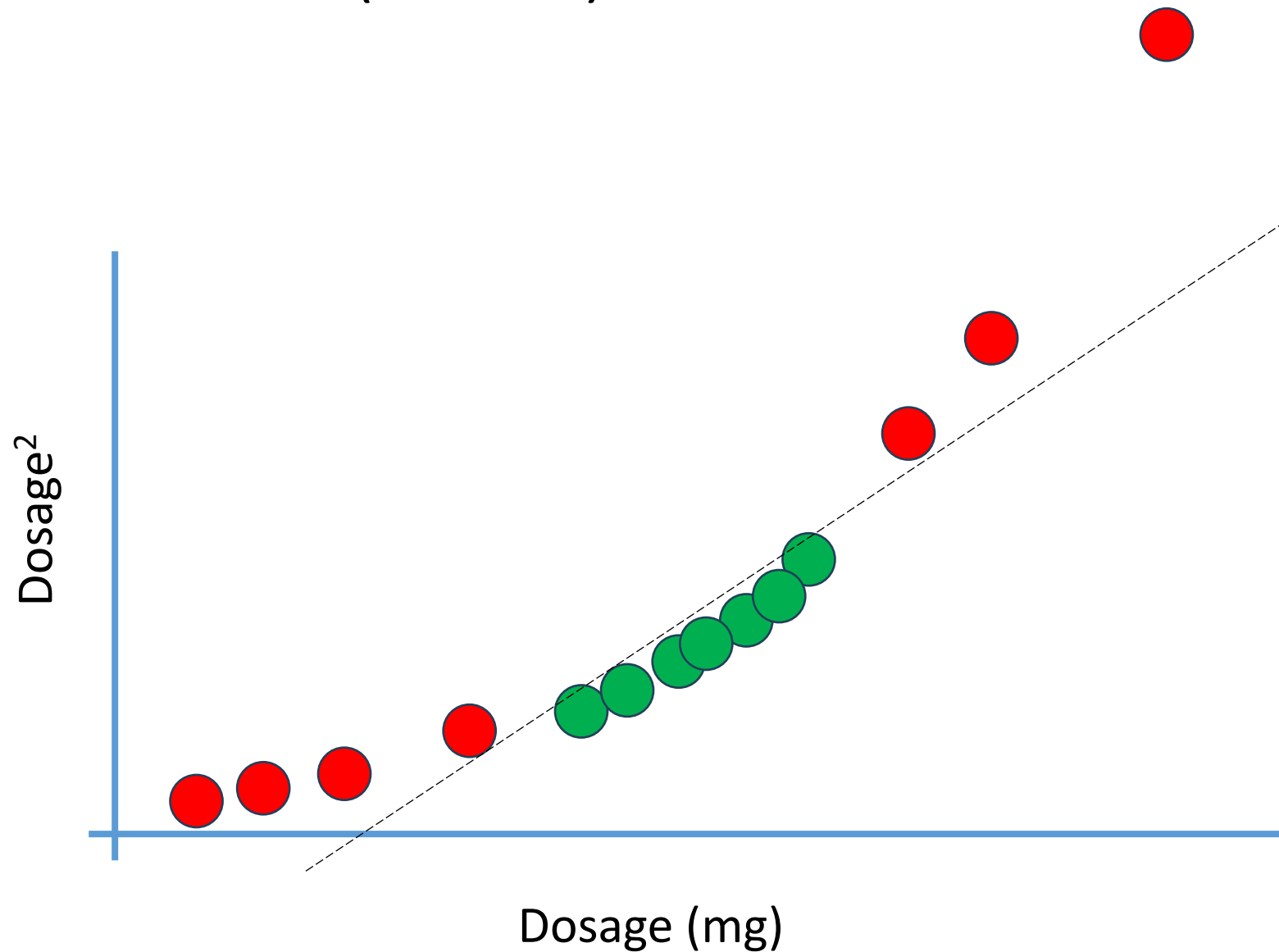
An Example Dataset
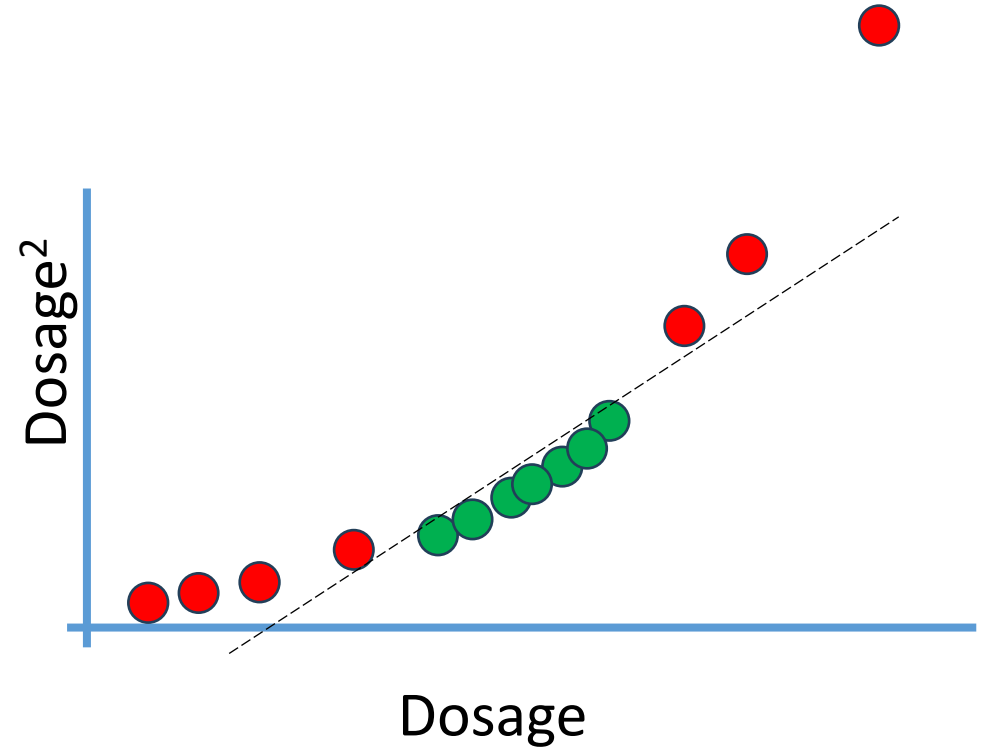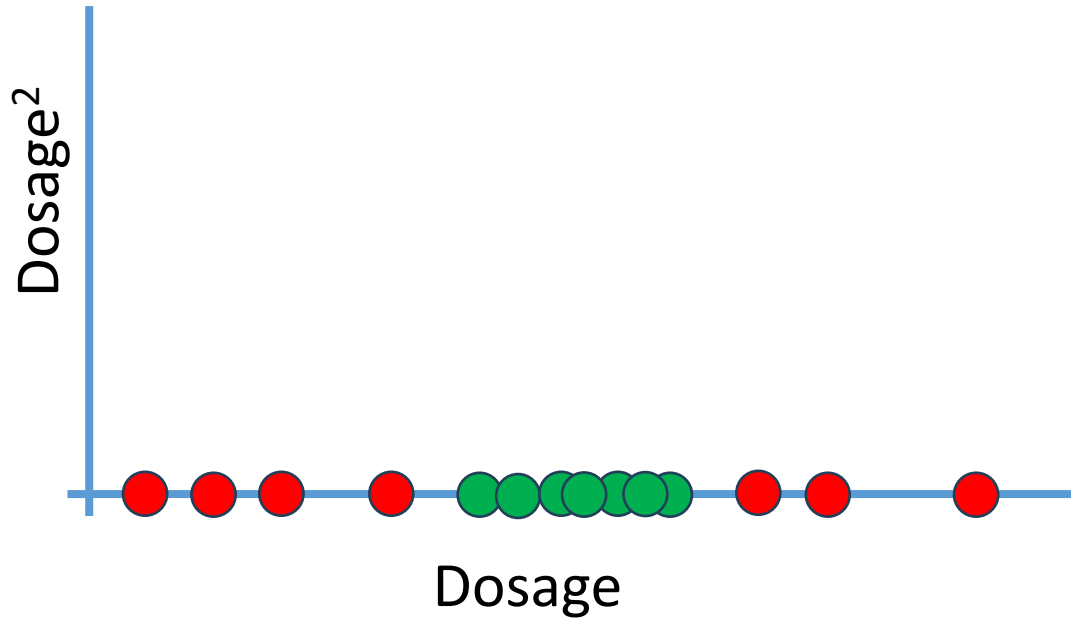
Dosage (mg)

Kernel Function

Kernel Function (Cont.)

Kernel Functions (Cont.)

- Support Vector Machines use *Kernel functions* to systematically to find support vector classifiers in higher dimension.
  - Linear
  - Radial Basis Function
  - Polynomial
  - Sigmoid

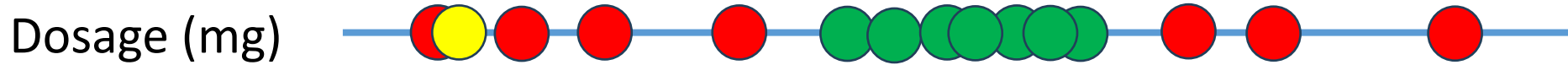# An Example Kernel: Radial Basis Function (RBF)

- To classify unseen example, RBF behaves similar to **weighted nearest neighbor** method.

Dosage (mg)

- RBF determines how much influence each observation in the training dataset has on classifying the new observations.

$$rbf\ kernel = e^{-\gamma(a-b)^2}$$

An Example of the influence of Gamma

Dosage (mg) ⸺●⦿●—●——●———●●●●●●●——●—●————●—

For gamma = 1

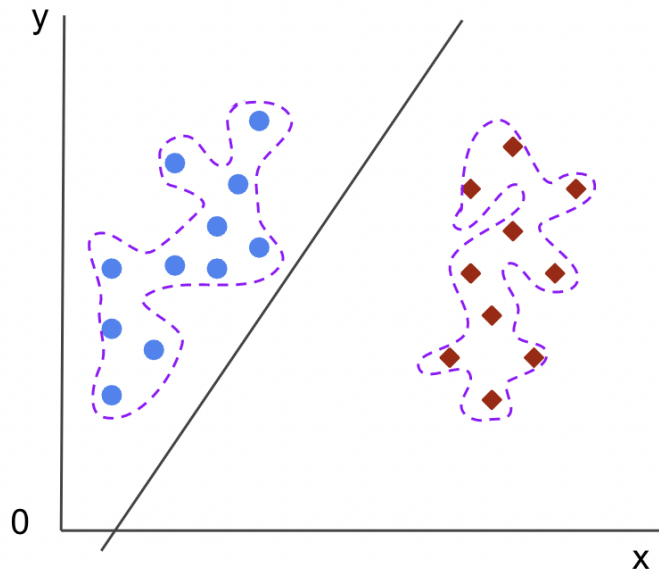$$rbf\ kernel = \ e^{-\gamma(a-b)^2}$$

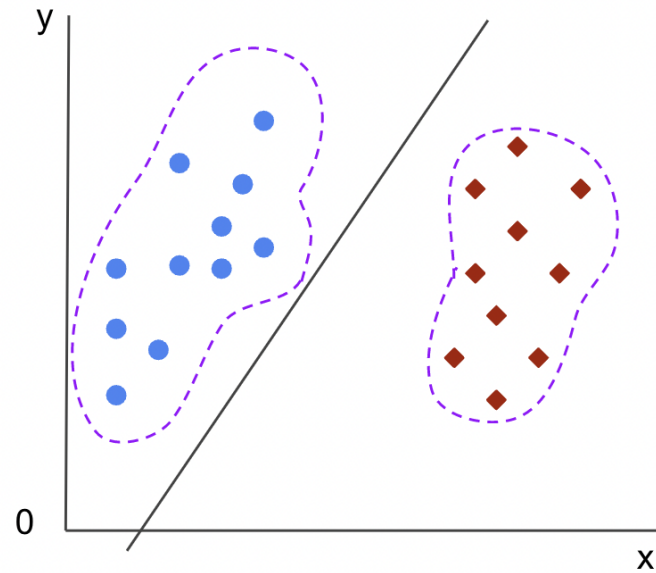For gamma = 2

$$rbf\ kernel = \ e^{-\gamma(a-b)^2}$$

The value we get from the RBF kernel is the relationship between two points in infinite dimensions.

The effect of Gamma on Decision Boundary