



MASSACHUSETTS  
GENERAL HOSPITAL

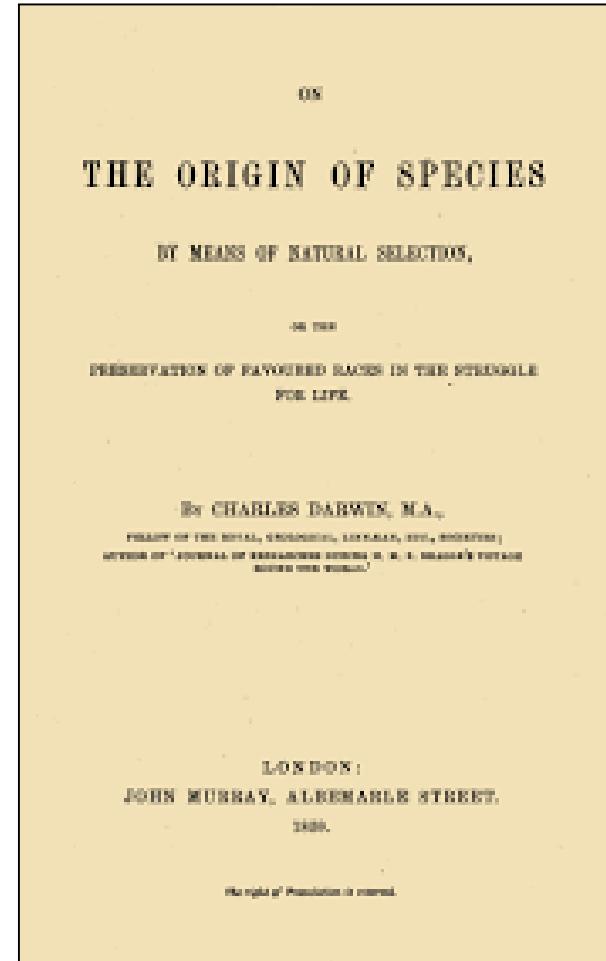
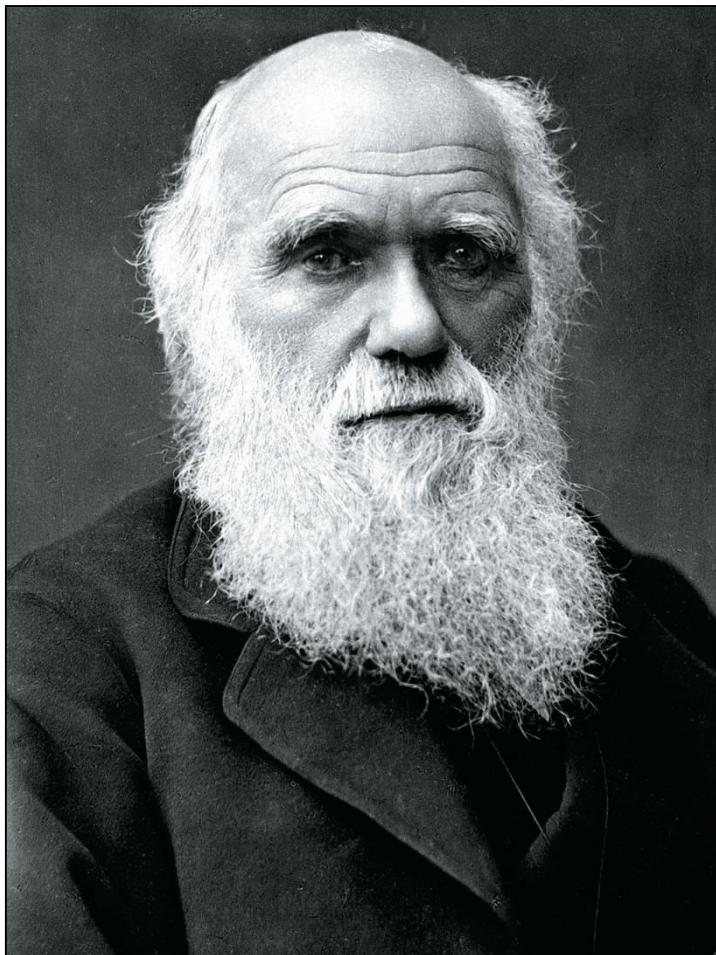
PSYCHIATRY ACADEMY

# Evolutionary Theory of Addiction

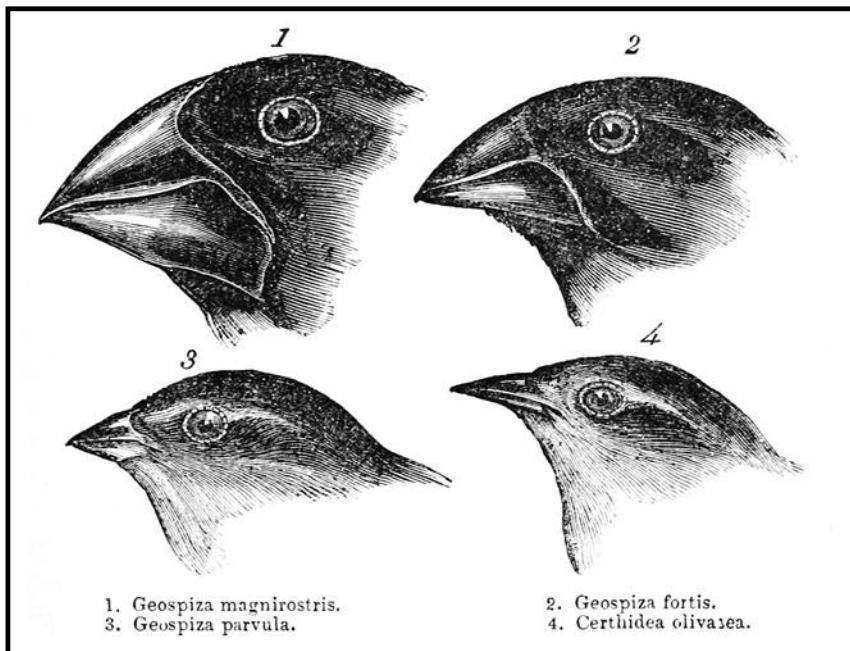
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Executive Director, MGH Psychiatry Academy  
Director, Child and Adolescent Residency  
Training Program, MGH and McLean

# Charles Darwin



# Galapagos Islands



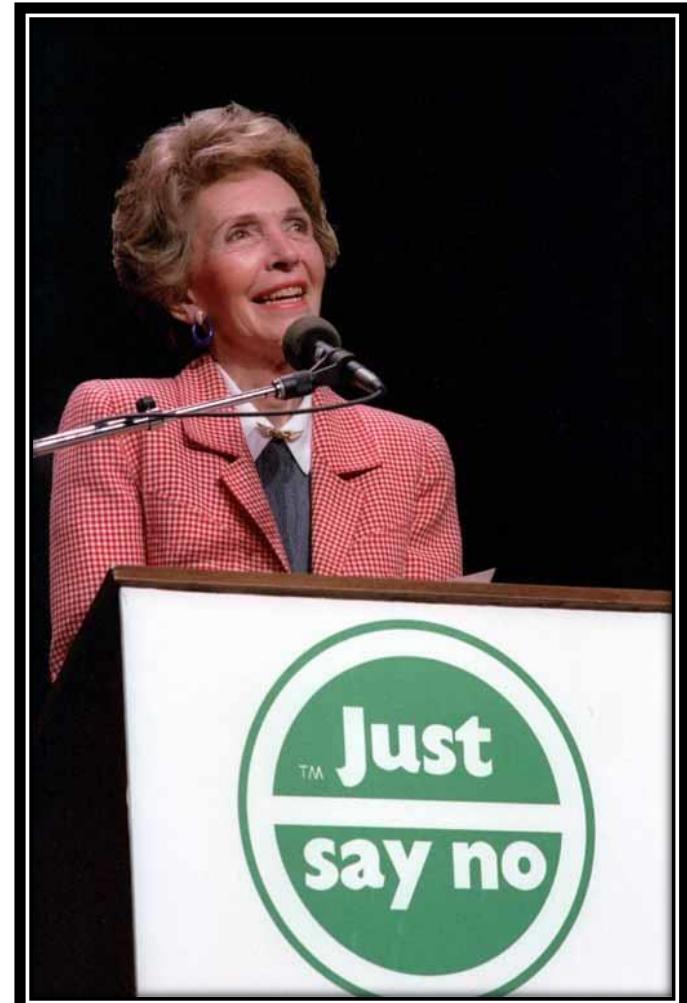
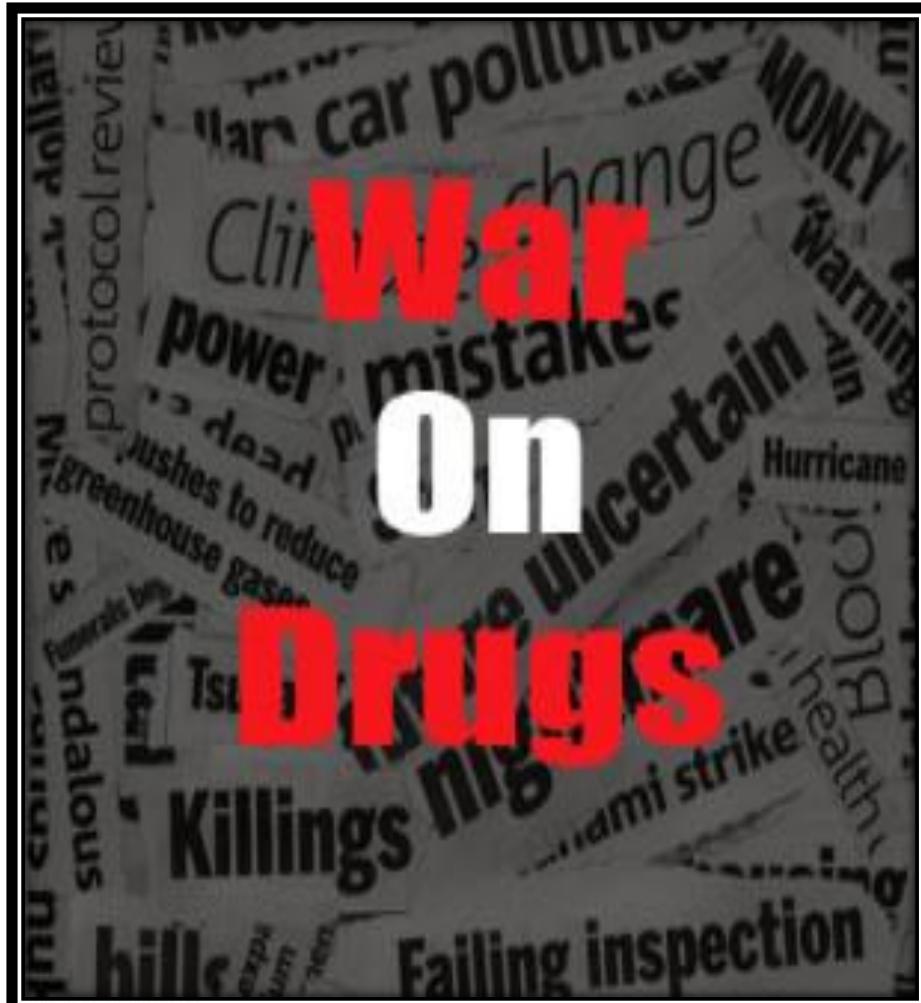
# Darwin's Tenets

- More individuals are produced each generation than can survive.
- Phenotypic variation exists among individuals and the variation is heritable.
- “Fitness”: individuals with heritable traits more suited to the environment will survive and reproduce.
- When reproductive isolation occurs, new species will form.

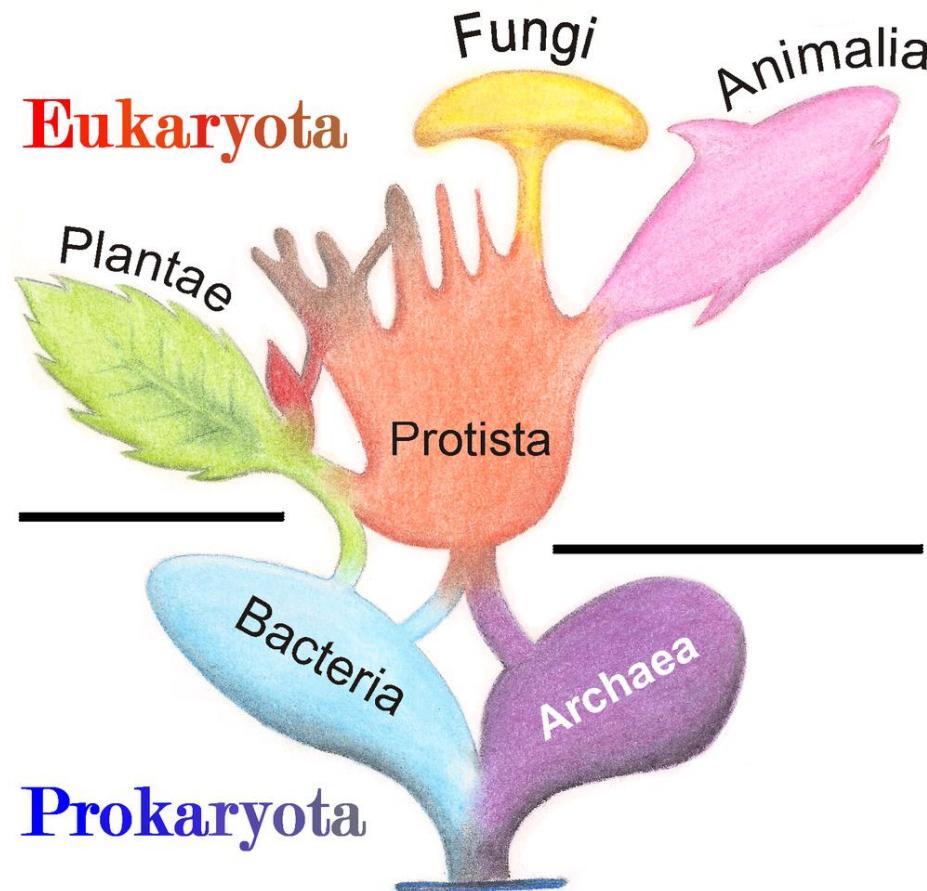
# Elusive mechanism



# Once Upon a Time...



# War Between Kingdoms



# Plant Defenses

## Mechanical



## Chemical

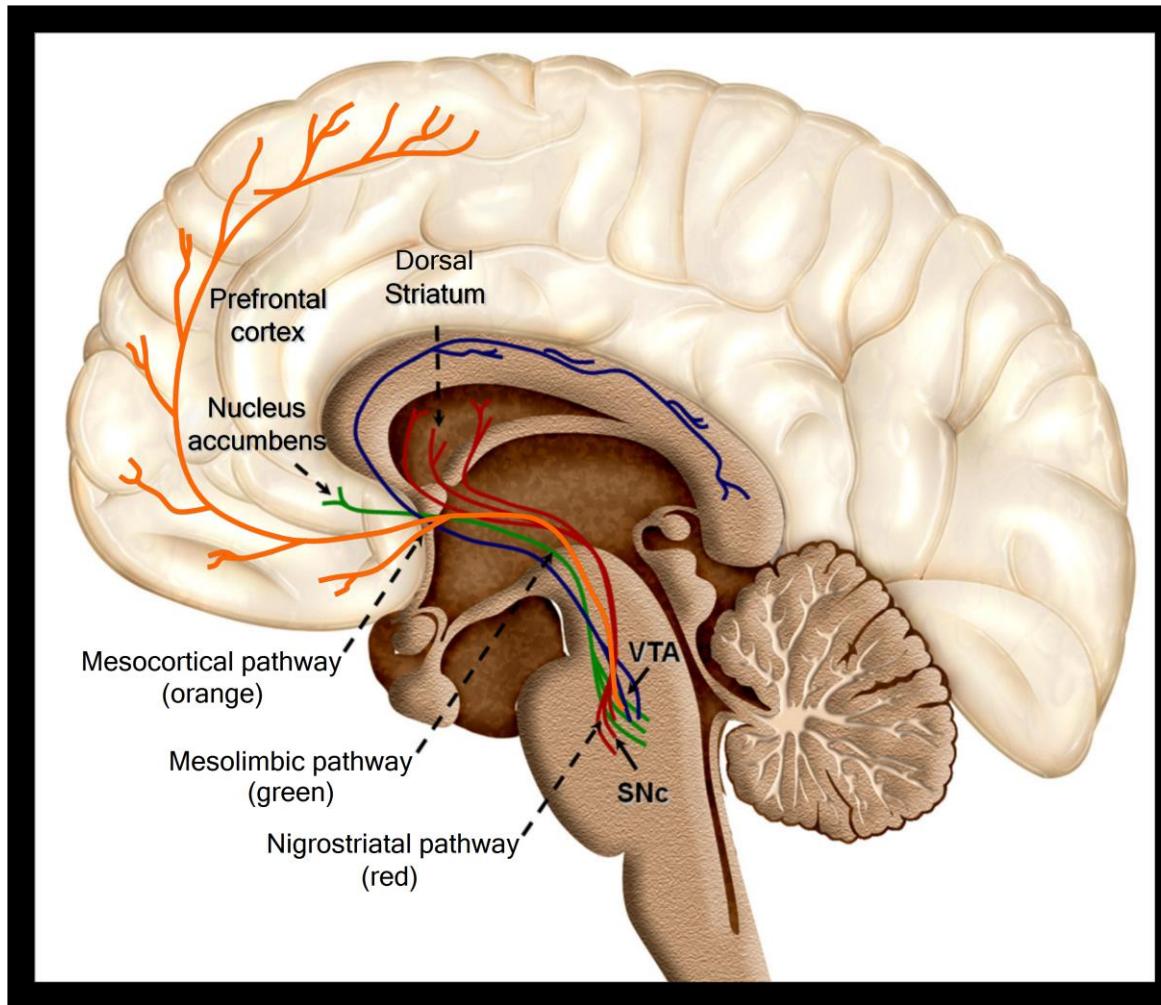


# Traitors among us

**Symbiosis = Exchange of Increased Fitness**



# Reward System and Fitness



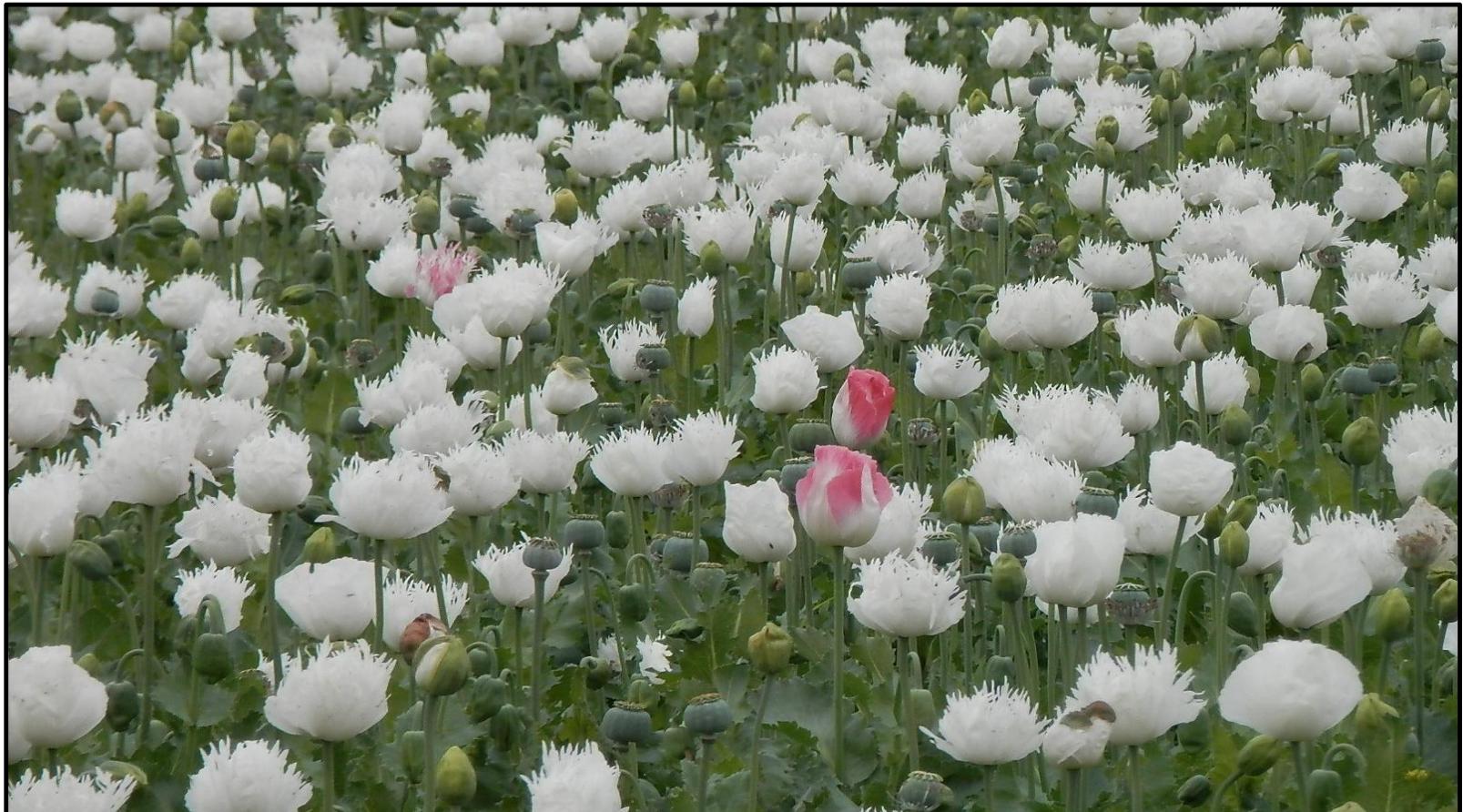
# Cooperation v. Deception

## Fitness



# Cooperation v. Deception

## *Illusion of Fitness*



# Axis and Allies

## Fungi



## Protists



# War Between Two Kingdoms



# A Message of Hope



# Thank you

