



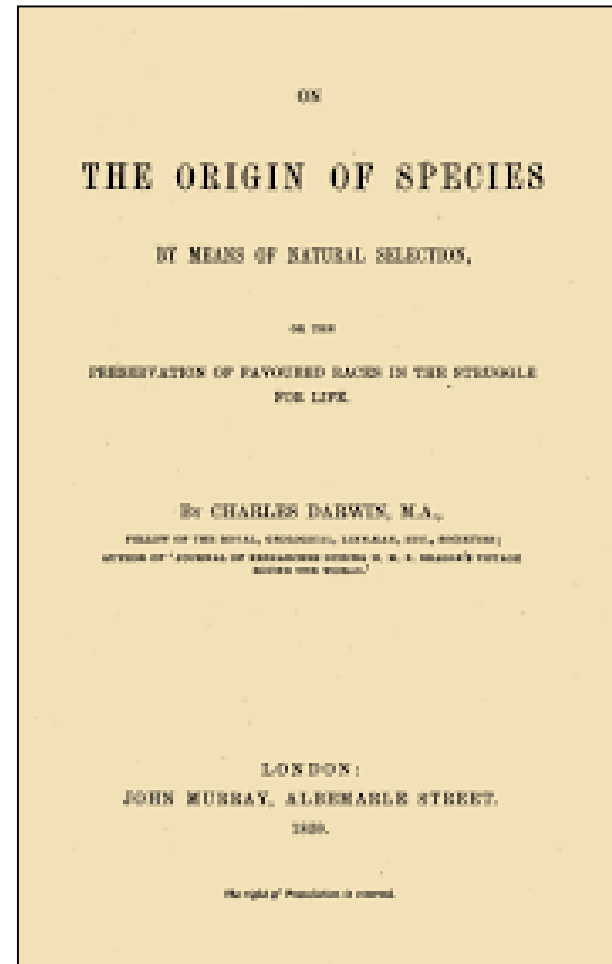
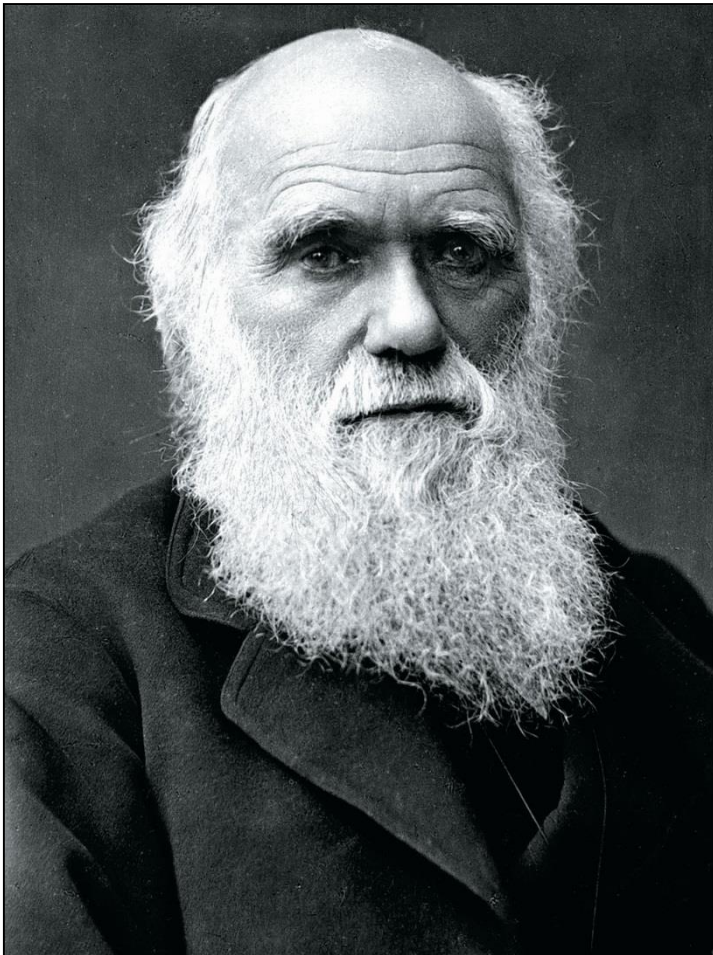
Evolutionary Theory of Addiction

David H. Rubin, M.D.

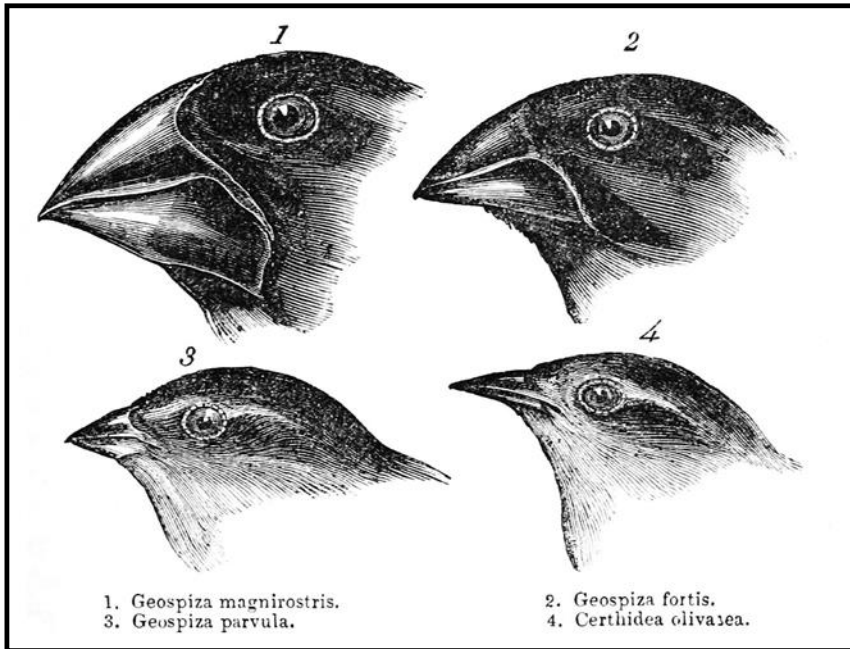
Executive Director, MGH Psychiatry Academy

Director, Child and Adolescent Residency
Training Program, MGH and McLean

Charles Darwin



Galapagos Islands



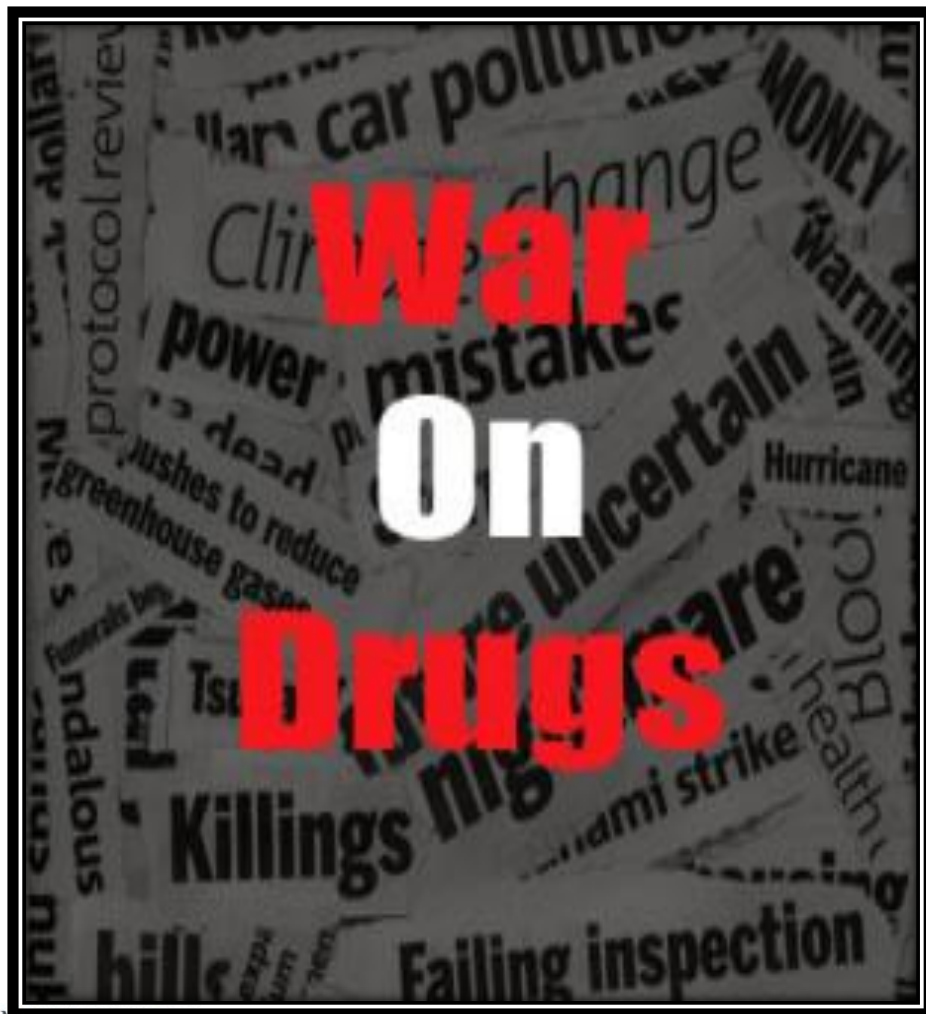
Darwin's Tenets

- 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.

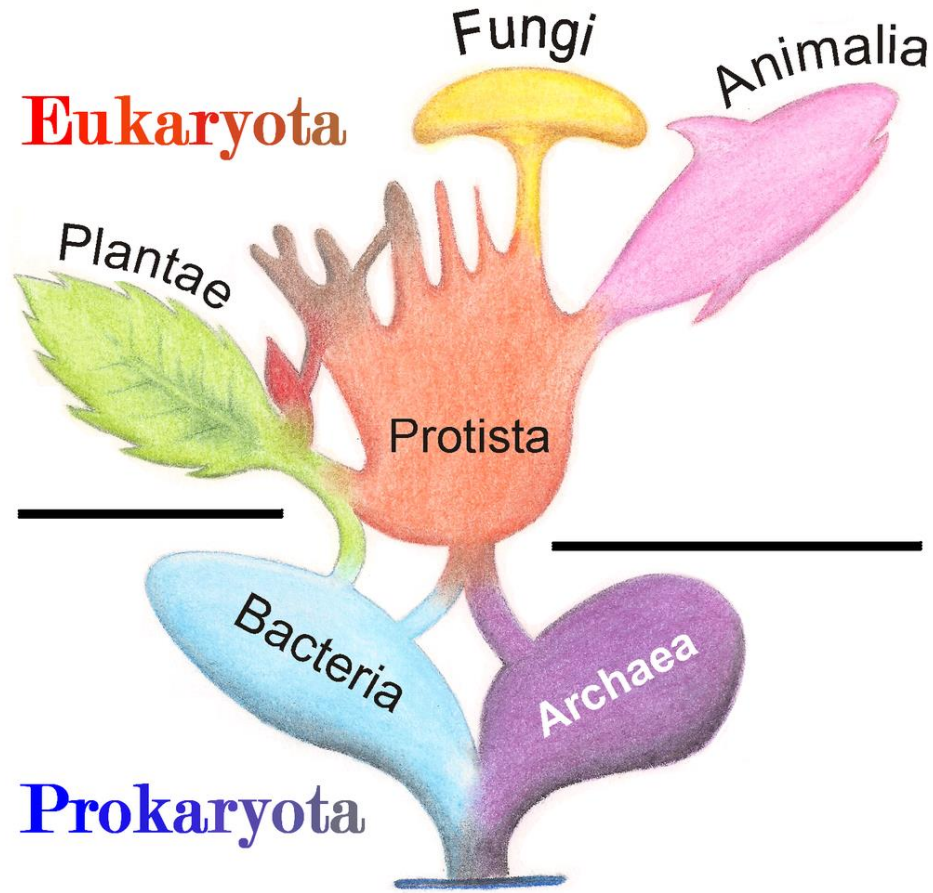
Elusive mechanism



Once Upon a Time...



War Between Kingdoms

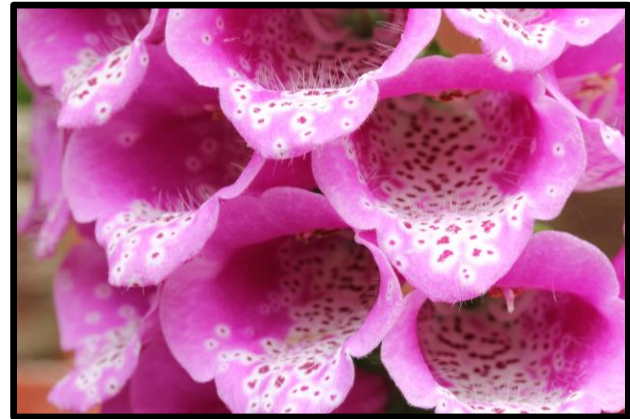


Plant Defenses

Mechanical



Chemical

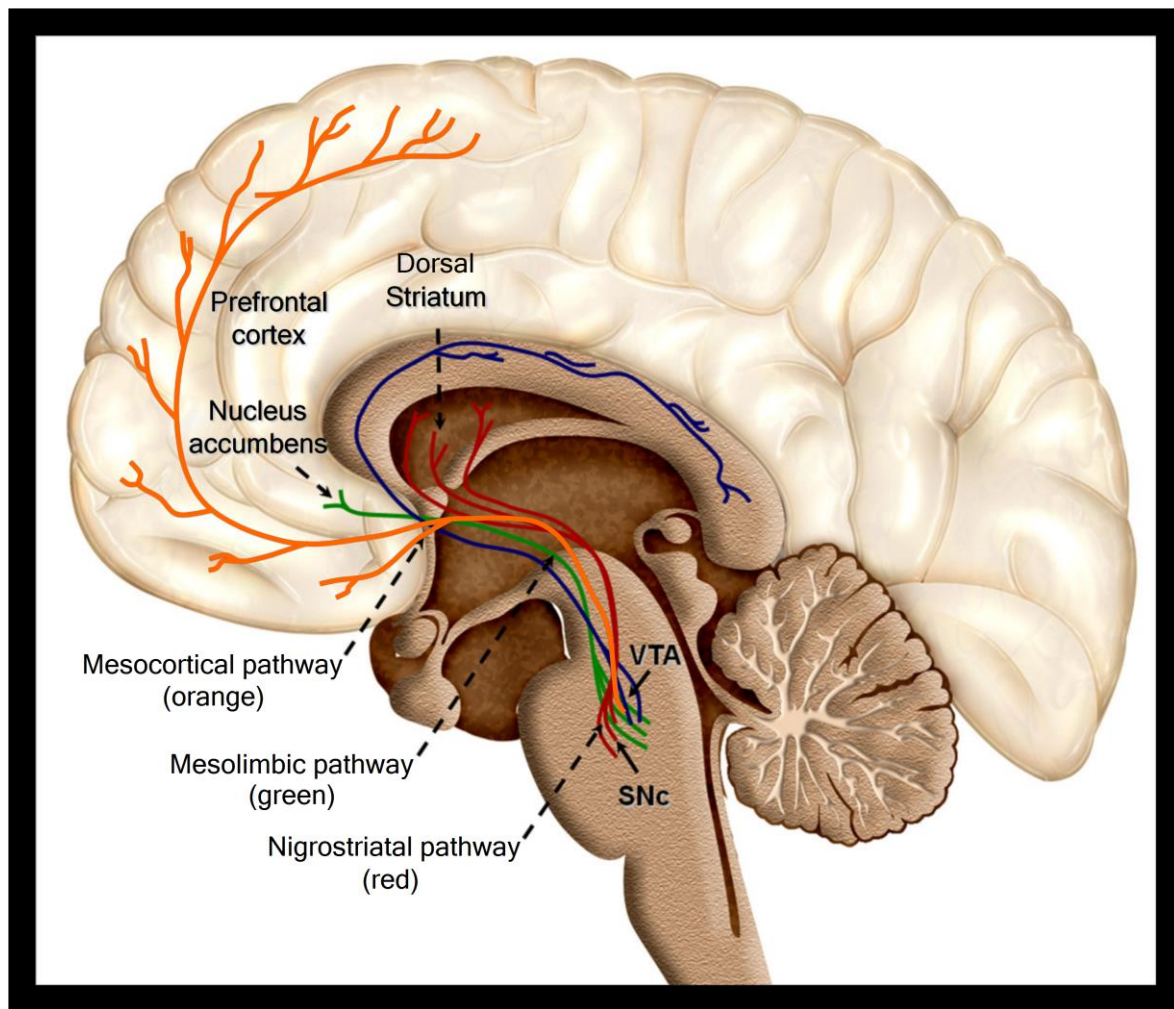


Traitors among us

Symbiosis = Exchange of Increased Fitness



Reward System and Fitness



Cooperation v. Deception

Fitness



Cooperation v. Deception

Illusion of Fitness

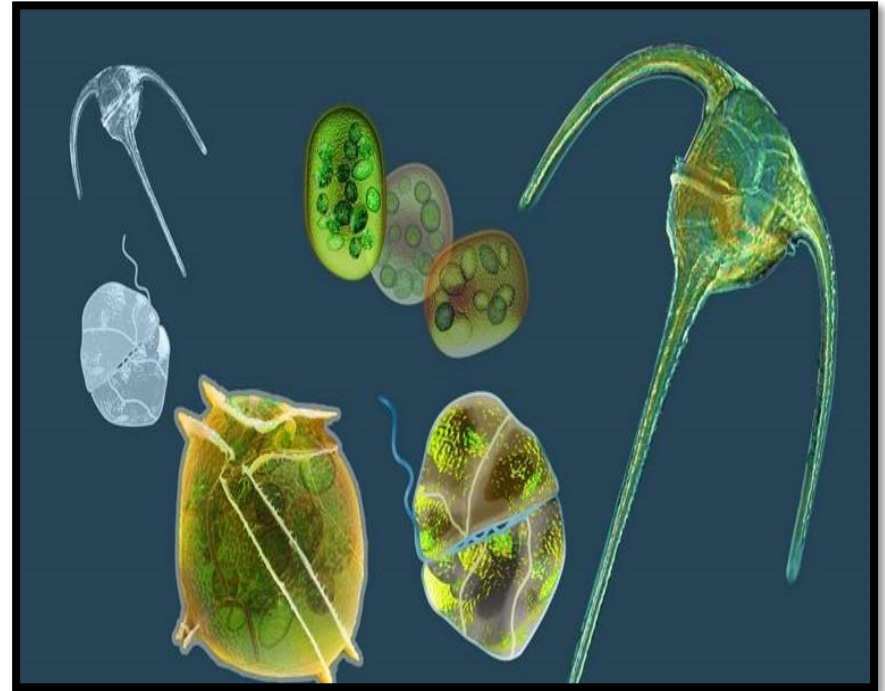


Axis and Allies

Fungi



Protists



War Between Two Kingdoms



A Message of Hope



Thank you

