



GROUPS



Bipolar Disorder

- 2.6% American adults
- No gender associated risk
- Gender associated presentation differences



Drug Treatments

Mood stabilizers

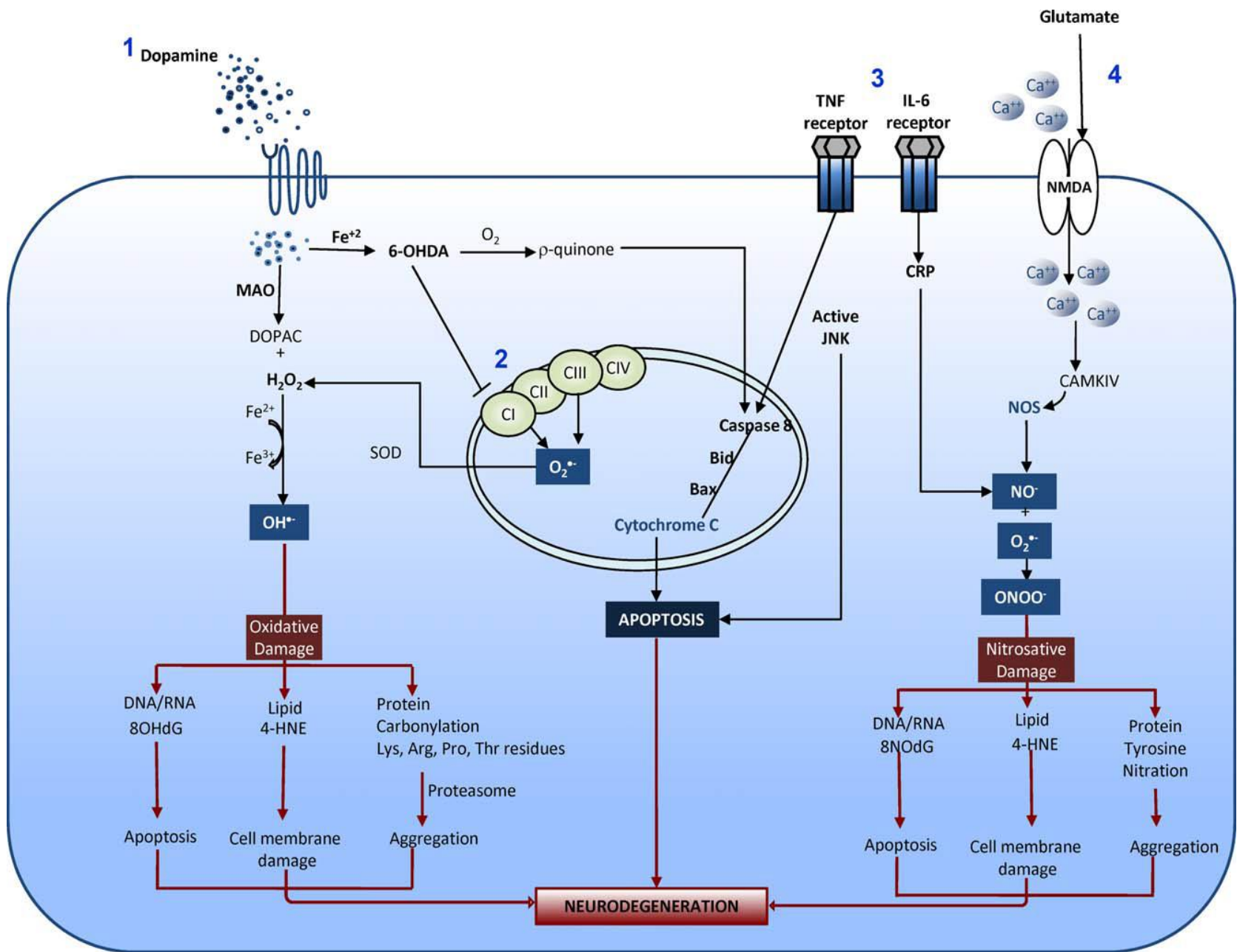
- lithium (Lithobid)
- valproic acid (Depakene)
- divalproex sodium (Depakote)
- carbamazepine (Tegretol, Equetro, others)
- lamotrigine (Lamictal)

Antipsychotics

- olanzapine (Zyprexa)
- risperidone (Risperdal)
- quetiapine (Seroquel)
- aripiprazole (Abilify)
- ziprasidone (Geodon)
- asenapine (Saphris)

Antidepressants

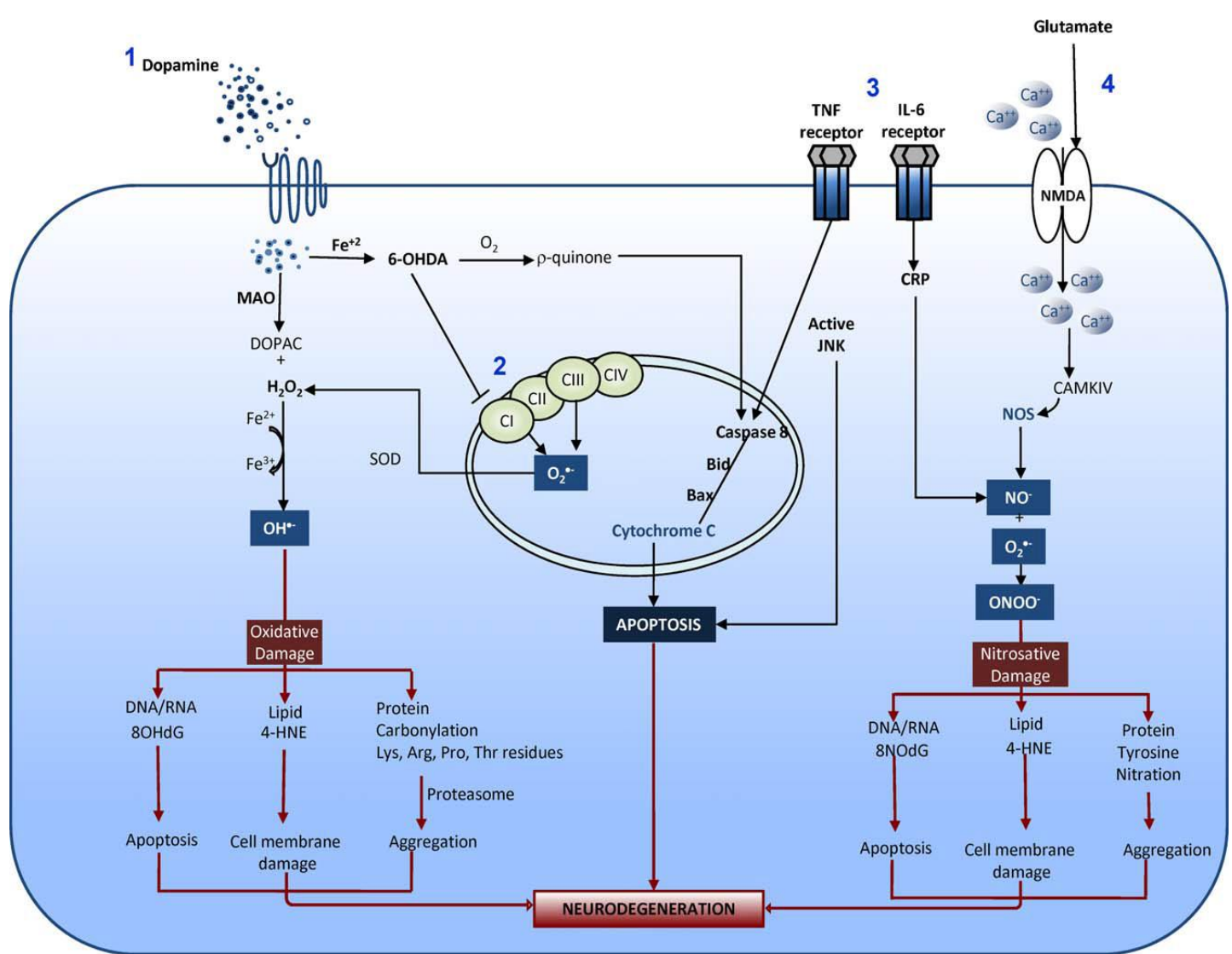
- fluoxetine (Prozac)
- sertraline (Zoloft)
- paroxetine (Paxil)
- bupropion (Wellbutrin)





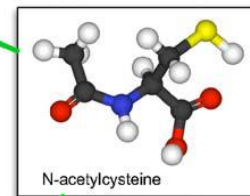
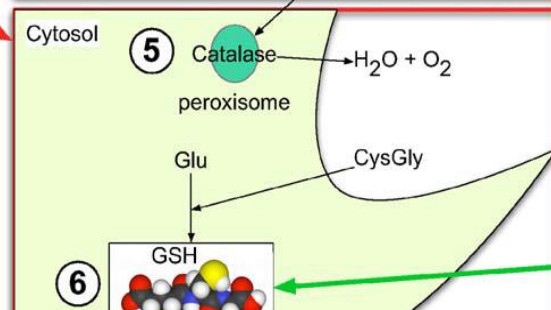
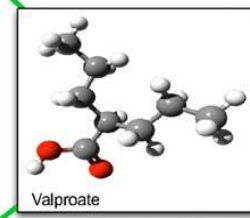
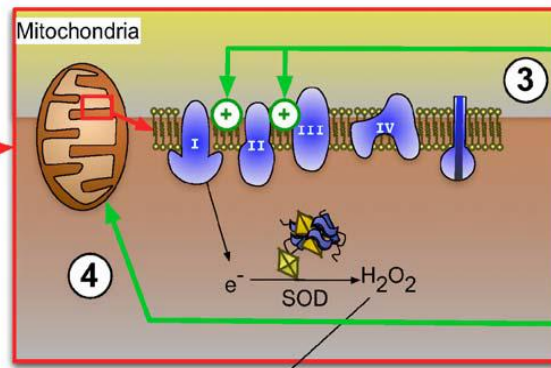
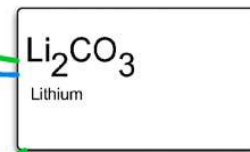
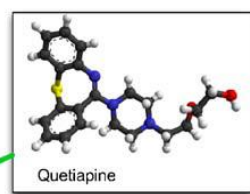
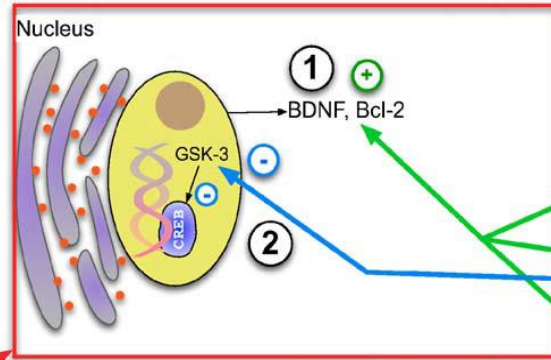
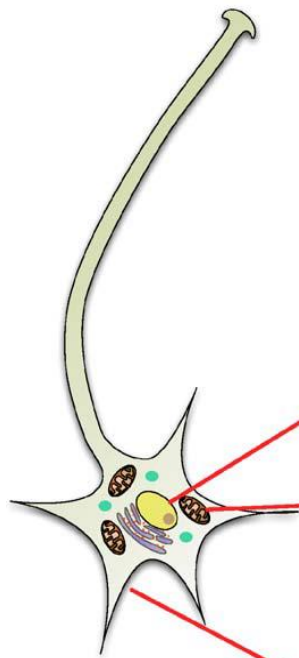
The dopamine receptor is

- A. A metabotropic receptor
- B. An ionotropic receptor
- C. A GPCR
- D. Increases oxidative stress
- E. A and C



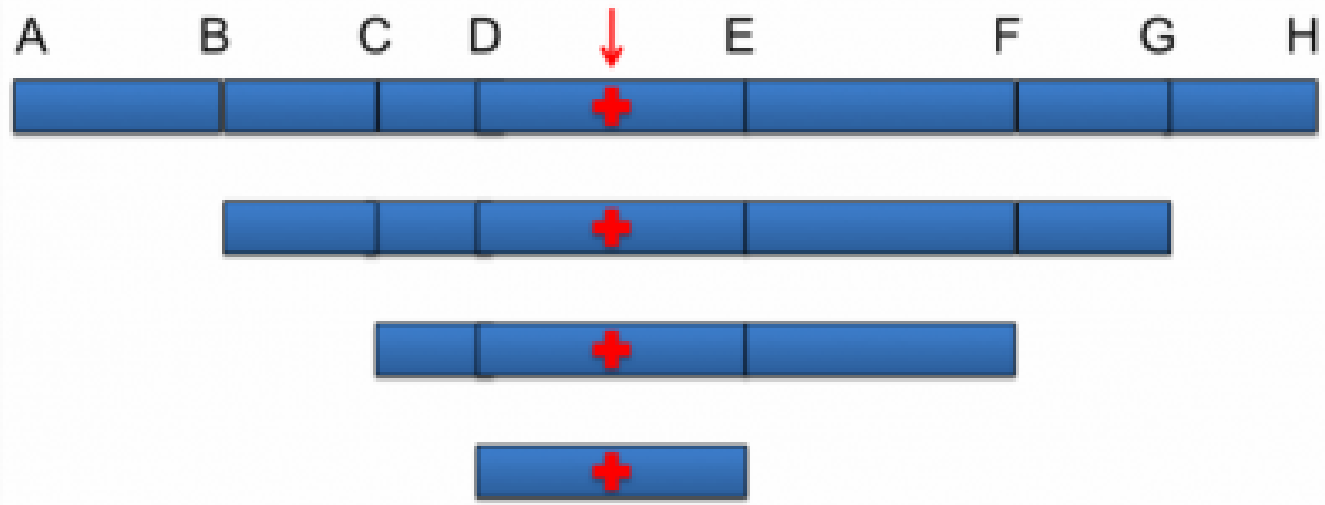
Team Workshop 1:

- Explain how RNA editing could effect NOS activity
- Explain how microRNAs could effect NOS activity



Team Workshop 2: Discuss and list which proteins in the electron transport chain can produce reactive oxygen species and which is the most likely contributor.

Mutation occurs in a gene in ancestral chromosome



Over time through different generations, recombinations between mutation and loci (A-H) results in disequilibrium decay



Table 2 Primary GWAS association results for four most significant regions

SNP	Chr.	Position ^a	Nearest gene	A1 ^b /A2	A1 frequency ^c	OR ^d (95% CI)	P_{raw}	P_{GC}
rs10994397	10	61,949,130	<i>ANK3</i> ^d	T/C	0.06	1.35 (1.48–1.23)	5.5×10^{-10}	7.1×10^{-9}
rs9371601	6	152,832,266	<i>SYNE1</i>	T/G	0.36	1.15 (1.21–1.10)	4.3×10^{-9}	4.3×10^{-8}
rs7296288	12	47,766,235	Many	C/A	0.48	1.15 (1.20–1.09)	9.4×10^{-9}	8.4×10^{-8}
rs12576775	11	78,754,841	<i>ODZ4</i>	G/A	0.18	1.18 (1.25–1.11)	2.7×10^{-8}	2.1×10^{-7}

^aSNP basepair position on Build 36. ^bA1, allele 1; A2, allele 2. ^cAllele frequency in the total sample. ^dOdds ratio (OR) is predicted toward allele A1. *ANK3* was previously reported⁸. Chr., chromosome.

This table shows that

- A. Only a few genes are responsible for bipolar disorder
- B. The disease associated SNP near the *ANK3* gene is a T to C mutation
- C. rs9371601 indicates raw sequence position 9371601
- D. The SNP near the *ODZ* gene shows the most significant association



Table 3 Association results for the primary GWAS, replication and combined samples

SNP	Chr. ^b	Position ^c	A1	A2	Primary GWAS		Replication ^a		Combined GWAS and replication		Genes in the LD region
					P_{GC}	OR ^d	$P_{1-sided}$	OR	P_{GC}	OR	
rs4765913	12	2,290,157	A	T	6.50×10^{-6}	1.15	1.60×10^{-4}	1.13	1.52×10^{-8}	1.14	<i>CACNA1C</i>
rs10896135	11	66,307,578	C	G	8.46×10^{-6}	0.88	1.47×10^{-3}	0.91	1.56×10^{-7}	0.89	<i>ZDHHC24, YIF1A, TMEM151A, SYT12, SPTBN2, SLC29A2, SF3B2, RIN1, RCE1, RBM4B, RBM4, RBM14, RAB1B, PELI3, PC, PACS1, NPAS4, MRPL11, LRFN4, KLC2, GAL3ST3, DPP3, CTSF, CNIH2, CD248, CCS, CCDC87, C11orf86, C11orf80, BRMS1, BBS1, B3GNT1, ACTN3</i>
rs2070615*	12	47,504,438	A	G	4.00×10^{-5}	0.90	2.52×10^{-3}	0.93	1.02×10^{-6}	0.91	<i>RND1, DDX23, CACNB3</i>
rs12576775	11	78,754,841	A	G	2.09×10^{-7}	0.85	7.59×10^{-3}	0.92	4.40×10^{-8}	0.88	<i>ODZ4</i>
rs2175420*	11	78,801,531	C	T	2.90×10^{-5}	0.87	7.80×10^{-3}	0.92	2.35×10^{-6}	0.89	<i>ODZ4</i>

Team Workshop 3: Choose 1 of the genes listed in table 3 of the Sklar et alia paper and explore the using GeneCards. List 3 things you discovered.



Remember

- Before 12 PM of the next class day:
 - go to b.socrative.com/student/login and complete the quiz