

# How to discuss biology of mental illness with our patients



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[www.psychiatry.wisc.edu/courses/Nitschke/2016\\_bio\\_psycho\\_class/](http://www.psychiatry.wisc.edu/courses/Nitschke/2016_bio_psycho_class/)

# The course is designed to support:

- Biologically-informed behavioral interventions
- Treatment that incorporates knowledge about the synergism between medical and psychological treatment
- Talking with our patients in useful ways about biology

What are some common conceptions of biological causes of mental illness?

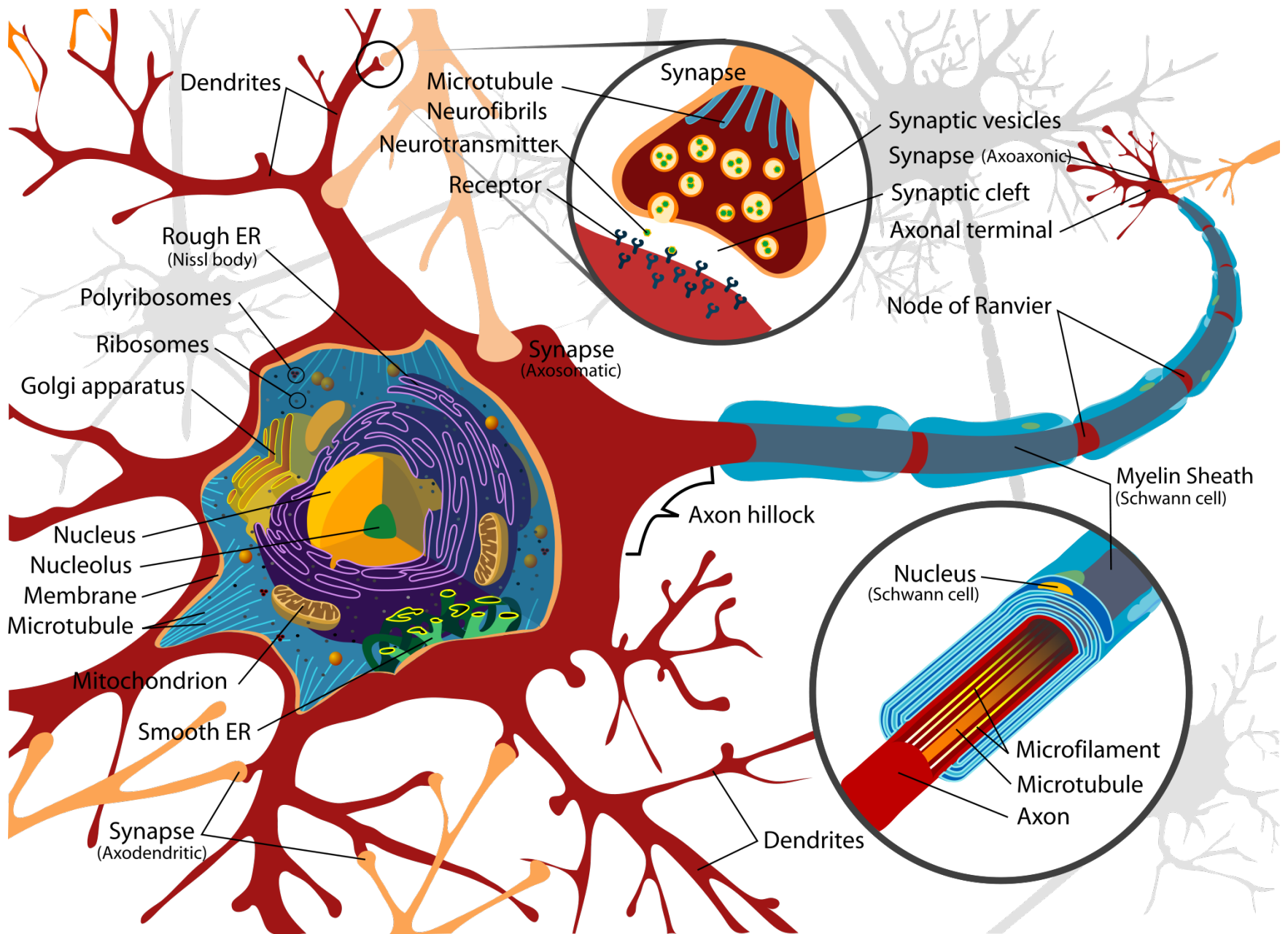


- The so-called “Nature vs. Nurture Debate” is now moot
- We now understand mechanisms through which our experiences create lasting biological changes

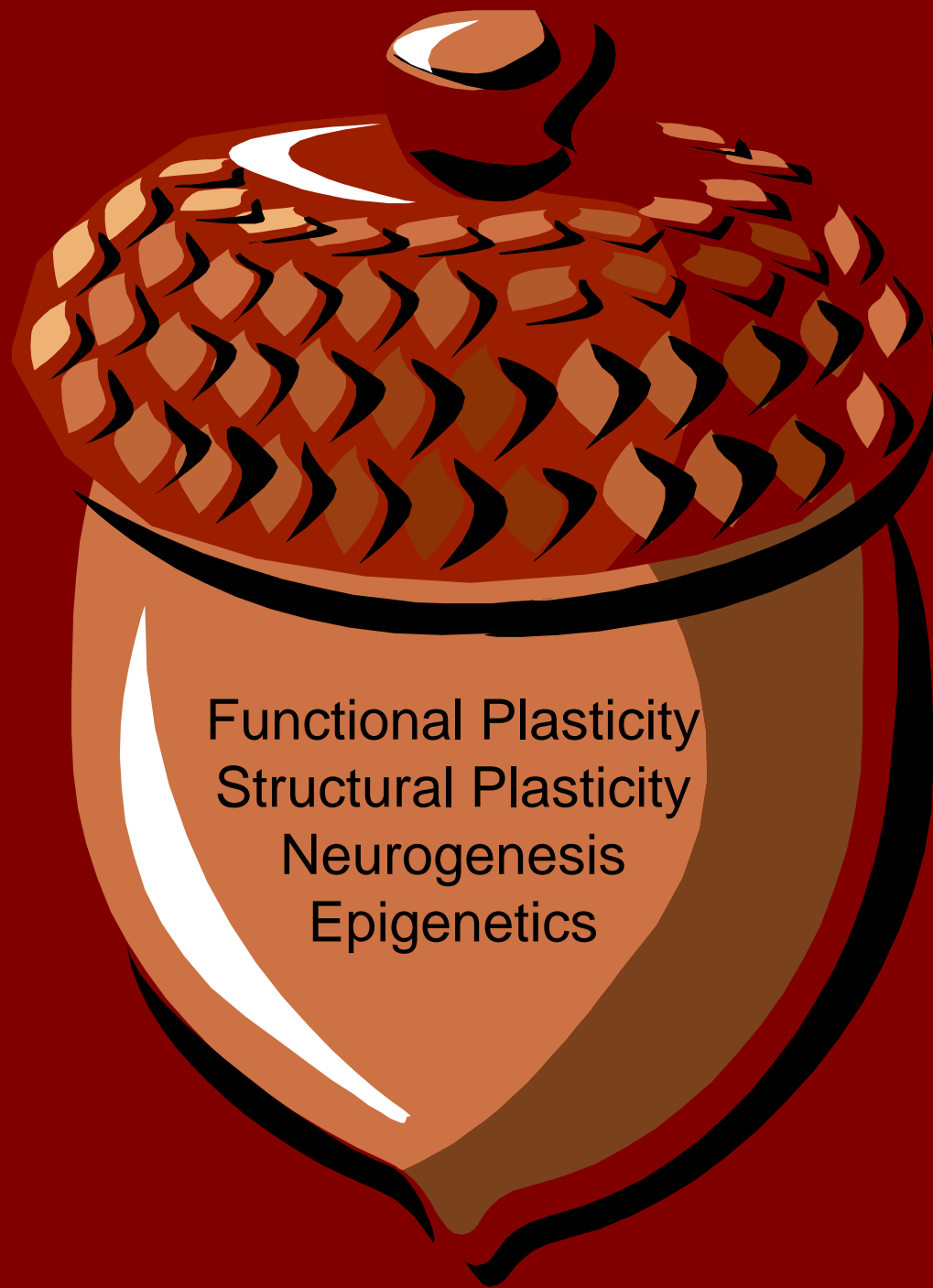
# Neuroplasticity: What is it?

- Functional & structural adaptations to the environment (Citri & Malenka, 2008)
- Experience-dependent changes in brain function & structure, related to:
  - Learning and acquiring new information
  - Adaptive behavioral choices
  - Practice & repetition of new behaviors

(Pittenger & Duman, 2008; Kasper & McEwen, 2008; Tononi & Cirelli, 2006)
- Activity-dependent: “Cells that fire together wire together” (referred to as Hebb’s law)



From: [http://en.wikipedia.org/wiki/Activity-dependent\\_plasticity](http://en.wikipedia.org/wiki/Activity-dependent_plasticity)



# Neuroplasticity

- Neurogenesis (mainly in dentate gyrus of hippocampus)
  - Proliferation and survival of newborn neurons
  - Migration into neural circuits sculpted by experience
- Experience-induced epigenetic marks
  - Long-term changes in gene expression without changing the DNA



Myth: If the disorder is biologically-based, then  
it must be treated medically (and  
psychological treatments are irrelevant)

Alternative: Synergism between medical &  
psychological treatments

“The pharmacological effects of antidepressants need to  
be combined with psychological rehabilitation to  
reorganize networks rendered more plastic by the drug  
treatment.”

Karpova et al. (2011) *Science*.

“The joint use of pharmacological and psychotherapeutic interventions might be especially successful because of a potentially interactive and synergistic—not only additive—effect of the two interventions.

Psychopharmacological treatment may help consolidate the biological changes caused by psychotherapy.”

Eric R. Kandel, M.D., 1998

# Summary

- Psychotherapeutic learning: behavioral sculpting of new circuits requires practice & repetition
- Many psychotherapies are biologically-informed behavioral treatments (e.g., Mindfulness, CBT, IPSRT)
- Synergism between medical & behavioral treatment: Many medically-oriented psychiatric treatments alter neuroplastic mechanisms

# Role-plays – We are going to practice!

