The generally accepted knowledge about the brain is that it starts going downhill fairly early in life, which is true, and that there is little one can do about changing that pattern, which is not true. Increases in cortical growth as a consequence of stimulating environmental input have been demonstrated at every age, including very old age.

—Marian Diamond

1. The physiology of aging on a cellular basis has been a research topic. The number of times a cell can replicate itself is thought to be a limit on longevity. Were your students aware that different cells in the body reproduce themselves at different rates?

2. Had your students known of the work of “The Berkeley Group” on the effects of environmental enrichment on the brains of rats? The major papers were published in the 1960’s. Psychology Today listed the research as one of the major psychological discoveries in the 20th century in its Millennium issue. Have your students compare the interactions of environmental factors with physiological ones. The “nature” and “nurture” dichotomy has been abandoned as we learn more about these interactions.

3. A news article based on the work of Eleanor Maguire of University College, London, indicates that the hippocampus structures of experienced cab drivers in London are larger than those similarly aged men (London cabdrivers are required to know the complex city’s geography in order to obtain their licenses.). The hippocampus’ size correlates with the amount of time the cabdrivers had been on the job. More experienced drivers had a larger hippocampus than those who not been working as long.

4. Donald Hebb was born in 1904 and was a neuropsychologist. His best-known work is The Organization of Behavior, published in 1949. His work explored the physiology of learning.

5. The Nun Study of the Sisters of Notre Dame (www.healthstudies.umn.edu/nunstudy) has offered a rare opportunity for a longitudinal study of aging and Alzheimer’s disease. Almost 700 elderly nuns agreed to participate in the study that includes review of their biography, research on their functioning while they are alive, and brain donation at death. It has proven to be a wonderful information source on the aging of human brains.

6. Dr. Diamond seems to hone her advice in this films for maintaining brain vitality to three elements: novelty, challenge, and healthy lifestyle (diet and exercise.) Ask your students to evaluate an elder using these perimeters. What kinds of experiences can be offered to aging adults in residential care situations that include these qualities?

7. This film focused on Dr. Diamond’s statements about intellectual functioning. Some of her statements about the importance of emotional contact were omitted in the final edit of this films because of time constraints. Can your students pick up clues about the importance she places on this aspect of life from the photos with her husband, her children, and her students? Her office is filled with photos of family, friends, and past students, and she keeps in contact with many people through email.

8. The discovery that the brain creates new neurons in the associative cortex is very recent. Dr. Paul Baltes in our Aging Successfully film makes the distinction between two kinds of intellectual functioning: one that declines in old age—“fluid mechanics,” which has to do with the speed and accuracy of sensory-cognitive processing; biologically based)—and the other that doesn’t necessarily decline—“crystallized pragmatics,” socially learned skills like reading and writing and management strategies). Can you relate these distinctions to Dr. Diamond’s discussion of the association cortex?
9. In the area of child psychology, theorists like Piaget, Vygotsky, and Bruner have set the “constructivistic” view that children have to be actively involved in learning forth. Can you relate this to Dr. Diamond’s finding that rats who only watched other rats explore did not have the same cortical growth as the rats who were exploring?

10. In other films in this series, it is suggested that social systems have not kept up with the increased number of people living long lives. We have myths about how it is to be old, which have been difficult to dispel. Not long ago, people the same age of Dr. Diamond faced mandatory retirement. Discuss her contention that the elderly should share their expertise with the young. What kinds of social planning could foster this?

11. This series has presented “conversations” with three very different older women. Joan Erikson largely talked about the emotional components of aging, Betty Friedan the social, and Marian Diamond the intellectual. What commonalities do you see between their observations? Does any of their commentary contradict the others’? What evidence do they provide to demonstrate that personality factors in individuals are remarkably stable across the life span?

Marian Diamond, Ph.D.:

- Professor of Integrative Biology at the University of California, Berkeley
  - Dr. Diamond’s human anatomy course is available online at [www.youtube.com/watch?v=S9WtBRNydso&feature=channel](http://www.youtube.com/watch?v=S9WtBRNydso&feature=channel)
- Author
  - *Enriching Heredity (Impact of the Environment on Brain Development)*
  - *The Human Brain Coloring Book*
- Co-Author
  - *Magic Trees of the Mind: How to Nurture Your Child’s Intelligence, Creativity, and Healthy Emotions from Birth Through Adolescence*
  - *Mental Fitness for Life: A 7 Step Guide to Healthy Aging* (foreword)
- Numerous scientific articles
- 1989
  - National Gold Medalist and California Professor of the Year.
  - Council for the Advancement and Support of Education (CASE), Washington, DC.
- 1995
  - University of California Alumna of the Year
- Fellow
  - American Association for Advancement of Science
  - California Academy of Sciences
Related Films Also Available from Davidson Films
This is one of six films in Davidson Films' "Gerontology" series. The other titles are:

- **Aging Successfully: The Psychological Aspects of Growing Old** (1998) 31 Minutes
- **Erik H. Erikson: A Life's Work** (1991) 38 Minutes
- **On Old Age I: A Conversation with Joan Erikson at 90** (1995) 39 Minutes
- **On Old Age II: A Conversation with Joan Erikson at 92** (1995) 30 Minutes
- **These Vital Years: A Conversation with Betty Friedan At 76** (2000) 24 Minutes

Other related films are:
- **Human Brain Development: Nature And Nurture** (2007) 27 Minutes