

Attachment #2 - Sample of reading material for class discussions

Image of scientists/science

Terzian, S. G., and A. L. Grunzke. 2007. Scrambled eggheads: ambivalent representations of Scientists in 6 Hollywood film comedies from 1961 to 1965. *Public Understand. Sci.* 16:407-419.

Toobin, J. 2007. The CSI effect. *The New Yorker* 05/07/2007.

Weingart, P, C Muhl, and P Pansegrau. 2003. Of power maniacs and unethical geniuses: science and scientists in fiction film. *Public Understand. Sci.* 12:279-287.

http://en.wikipedia.org/wiki/Science_fiction_film_-_Alien_life_forms

Why do scientists engage in outreach?

Martín-Sempere, M. J., B. Garzón-García, and Rey-Rocha. J. 2008. Scientists' motivation to communicate science and technology to the public: surveying participants at the Madrid Science Fair. *Pub. Understanding of Sci.* 17:349-367.

Understanding the public

Miller, J. D. 2004. Public Understanding of, and Attitudes toward, Scientific Research: What We Know and What We Need to Know *Public Understanding of Science* 13 (3):273-292.

Brown, Christine P., Stacie M. Propst, and Mary Woolley. 2004. Report: Helping Researchers Make the Case for Science. *Science Communication* 25 (3):294-303.

Rensberger, B. 2004. A better understanding of the public. *HHMI Bulletin*:28.

The Flame Challenge, Alda, A. The Flame Challenge. 2012 *Science* 335 p.1019

What does the public want to know?

Falk, J, M. Storksdieck, and L. D. Dierking. 2007. Investigating public science interest and understanding: evidence for the importance of Free-Choice learning. *Public Understand. Sci.* 16:455-469.

Falchetti, E., S. Caravita, and A. Sperduti. . 2007. What do laypersons want to know from scientists? An analysis of a dialogue between scientists and laypersons on the web site Scienzaonline. *Pub Understanding of Sci.* (16):489-506.

Why should we engage in outreach, and who should do it?

Pfeffer, S. 2010. Payback Time. *ASBMB Today* Editorial.

Henderson, M. . 2008. Conservative MPs will be forced to keep up with science. *The Sunday Times, Editorial*.

Lessons in Life (Science). 2008. Newsweek.

Lok, C. Editor for Nature. 2010. Science for the masses. *Nature*.

NSF graduate Research fellowship Program, review Criteria and broader impact 2011 #1.

NSF graduate Research fellowship Program, review Criteria broader impact. 2011 #2.

Appendix 2 – Science and Me Presentation topics

MU - Fall 2008

It's getting hot in here: *What's the big deal about climate change?*

Katie Becklin, Division of Biological Science

There's a lot of talk about global climate change, but what does that term really mean? Come learn the science behind climate change and how this phenomenon might affect you, your health, and your interests.

The aging brain: *What to Remember about Memory Loss*

Catharine Clark, Biomedical Sciences

Do you ever feel like you just can't remember things the way you used to, or you occasionally have to "jog your memory" to come up with names and places? Don't worry you are not alone. This presentation will explore the intricacies of the brain, how memory loss occurs and more importantly how to have more control over the aging brain.

Land-use effects on biodiversity: *How can my golf game help frogs and salamanders?*

Jennifer Hamel, Division of Biological Science

What is biodiversity? Come learn how roads affect wildlife and how golf courses affect amphibians. The answers may not be what you think! Come see how scientists answer these questions!

Critters in my backyard: *Why do they keep eating my flowers?*

Lianne Hibbert, Fisheries and Wildlife

Everybody likes having a nice looking yard, but what do we do about animals wreaking havoc on our plants? What causes this problem? What can we do to deal with all those critters?

The ever changing Flu virus and elephants with short tusks - what do they have in common? *Why is it so hard to guess the correct flu vaccine?*

Kathy Klymus Division of Biological Sciences

How can changes in an environment lead to changes in an organism's traits? We will look at examples from creatures as diverse as viruses and elephants to explore this idea of natural selection. We will learn how natural selection affects us with respect to vaccine-resistant diseases.

Genetically modified food: *What's on your dinner plate?*

Amy Replogle Plant Science

Within the past two decades scientists have learned how to move new traits into plants to make longer lasting vegetables and pest resistance plants. So how do you know if you are eating genetically modified food? Well the truth is you can't so this talk will address what are genetically modified foods and what you should know about them.

The eye, the light and the lens: *Why is it getting harder to see as I get older?*

Andrew West, Science Education

Is it getting harder and harder to see? Are eye appointments and the explanations that the doctor gives sometimes unclear? We will explore how the eye works, why it is sometimes difficult to see, and what the eye doctor does to help us see better.

Infectious diseases: *Can I catch my dog's cold or the bird's Flu?*

Jordan Shroyer, Fisheries and Wildlife

Should we really be worried about catching the "Bird Flu"? Are we really capable of catching another animals' illness? Spreading of disease and possible outbreaks will be discussed.

MU - Fall 2009

Development and Cancer - *When the body does not play by the rules..*

Anthea Aikins, Molecular Microbiology and Immunology

There are certain rules that control our body to make it function successfully. Compromising these rules can lead to diseases such as cancer. Join us as we explore the essential rules in the body and what happens when the body does not play by the rules.

The Secrets Behind the Sound of Music - *Science, symphonies, and synthesizers*

Gina Applebee, Geological Sciences

What is the science behind music and instruments? How do different instruments bring us so much expression, appreciation, and inspiration? This talk will focus on the science that helps us understand musical sounds, and explain how it has led to the enhancement of music in the age of technology.

Obesity, Diabetes, and Sleep Loss: *Do we "gain" by losing sleep?*

Rachel Barker, Geological Sciences

Sleep is necessary to maintain good health, but studies show that people are not getting enough. When we lose sleep we risk more than simply feeling tired. Could this epidemic of sleep loss be a contributing factor to some of the other health issues we see today?

My family's genes - *Do I have to be a chip off the old block?*

Erin Flenner, Division of Biological Sciences

Just how much do our parents' genes affect who we are today? We know that genetics affects more than how we look, but also how we act, learn and even our health. We can now learn from our family background and change the environment so that history is not doomed to repeat itself.

Think Green - *Having your medicine and eating it too?*

Tiffany Langewisch, Division of Biological Sciences

Even though illness has been around for centuries, doctors could not prevent sickness until the development of the smallpox vaccine. Today, biotechnology provides an alternative to traditional injection-based vaccines. How can eating produce help protect you against disease?

Allergies - *What are we sneezing at?*

Ashley Lough, Division of Biological Sciences

Have you ever wondered why you sneeze around your favorite flower, your friend's cat, or the dust under your bed? If you have, come hear about the science behind allergies and how they are treated.

Estrogens in our food - *How should I store my family's food?*

Elizabeth Jones, Animal Sciences

Science has vastly increased our understanding of how things around us can affect our bodies. We hear about estrogens that come from plastic containers. How do these differ from the natural estrogens found in our bodies? Are they bad for us?

The geologic timescale - *Where do we fit in?*

Geneviève Robert, Geological Sciences

The Earth is nearly 4.6 billion years old and has gone through many exciting transformations, from Moon formation early in its history to the beginnings of life more recently. How exactly is the history of the Earth defined? Where do we, humans, fit in? And why is it important?

MU - Fall 2010

MOVE more and SIT less: - *The health benefits of putting your socks on.*

Jacqueline Crissey, Biomedical Science

Mentor: Dr. Frank Booth, Biomedical Sciences

We all know that regular exercise is good for our health, but what if we are unable to be as active as we would like? Science tells us that we can benefit just by sitting less, and moving more. Come and learn how!

Sugar - The good, the bad and the alternative: *The bitter side of our sweet tooth.*

Rylee Do, Division of Biological Sciences

Mentor: Dr. Matthew Will, Psychology

Sugar – a friend or a foe? Either way, isn't it best to know more about it before jumping to conclusions or consuming too much of it? Sugar has been with us from our happiest to our most desperate moments in life. Can we live without it? Do we have to?

Naked and hungry - *Where would we be without science in agriculture?*

Hannah Evans, Animal Sciences

Mentor: Dr. Bryon Wiegand, Animal Sciences

As the world population increases at a rapid rate and farm land becomes scarce, producing enough affordable food and clothing for everyone has become a concern. Come join us as we discuss the importance of science in agriculture and what scientists are doing to help.

Aid for AIDS - *Will there be a cure?*

Sanath Janaka, Molecular Microbiology and Immunology

Mentor: Dr. Marc Johnson, Molecular Microbiology and immunology

AIDS has been around for several decades, yet there is still no cure, and there is no vaccine to prevent infection. Where are we at conquering AIDS?

Osteoporosis as a childhood disease - *Health habits your kids have can “make” or “break” it, literally.*

Kayla Kanosky, Animal Sciences

Mentors: Dr. Charlotte Phillips, Biochemistry

Dr. Marybeth Brown, Physical health and Rehabilitation

Do you or someone you know suffer from osteoporosis? Research shows that our nutrition and physical activity at a young age influence this disease. Come and learn about preventing osteoporosis from a very young age.

What is the need to study a weed? – *Why scientists study simple organisms.*

Lakshminarasimhan Krishnaswamy, Division Biological Sciences

Mentor: Dr. James Birchler, Division of Biological Sciences

We often hear in news about scientists working on obscure organisms such as fruit-fly, soil worm, yeast, or weeds. Why are scientists keen on studying these organisms? Come and hear what this has to do with our own well-being.

Life is a Balancing Act - *What does science tell us about falling down?*

Lindsay Reustle, Division of Biological Sciences

Mentor: Dr. Linda Lutz, Elm St. Yoga

Everyone occasionally trips and falls down. Come join us as we explore our sense of balance and ways to improve balance to reduce the risk of fall-related injuries.

Facts about Fat – *Are some fats good for us?*

Justin Rickard, Animal Sciences

Mentors: Dr. Bryon Wiegand, Animal Sciences, and Dr. Kevin Fritsche

Is there really such a thing as good cholesterol? What exactly is a trans fat? These and other questions will be discussed in this presentation, which aims to shed some light on a very common and often misunderstood topic of fat.

An aspirin a day keeps what away? *How common pain relievers affect our body.*

Kizzi Roberts, Animal Science

Mentor: Fred Wininger, Neurology/Veterinary Medicine

Do you ever wonder how Tylenol works? Or why it's ok to take an aspirin every day? Pain relievers are used by almost everyone at some point, for a headache, a backache, and even a toothache, and they provide great relief, but what else do they do?

The Dirt on Dirt - *Can we protect soil quality while producing enough food?*

Roxi Steele, Division of Biological Sciences

Mentor: Keith Goynes, Soil, environmental and atmospheric Sciences

Can your garden soil benefit from the addition of nutrients? How do poor farming practices and building construction erode our soil and pollute our streams. Come hear about the science behind soil conservation and protecting soil quality.

The physics of flushing - *How science is improving the most commonly used seat in our house.*

Jessica Wood, Division of Biological Sciences

Mentor: Allen Thompson, Biological Engineering

Learn how the modern toilet is a prime example of science at its best. Integrating engineering, physics, and biology, scientists are working to improve upon a century old device to create a greener and more cost-effective throne.

Westminster College, Fall 2011

Mother Nature's little helpers: *How do microbes impact the environment?*

Jonie Block – Senior, Biochemistry, Westminster College

Mentor: Dr. Irene Unger, Biology and Environmental Studies, Westminster College

What happens when plants and animals decompose? How are basic elements such as carbon, oxygen and nitrogen returned back to the environments? Come learn about how bacteria impact the environment, and affect our lives in the process.

Food Allergies: *Uncommon Symptoms Caused by Common Sources*

Leah George – Senior, Biology, Westminster College

Mentor: Dr. Mark Vandewalker, Allergy/Immunology specialist

What we eat has a major impact on our overall physical health. Recent advances in science show that some patients' persistent health problems may be due undiagnosed food allergies. Come and learn how some common ailments may be linked to previously unrecognized allergies.

The importance of being proactive: *How does the Gardasil HPV vaccine prevent cancer?*

Lee Goatley – Senior, Biology/Spanish, Westminster College

Mentor: Ms. Sarah Revelle, Family Nurse Practitioner, Wellness Clinic, Westminster College

The human Papillomavirus (HPV) is the most common sexually transmitted infection and is known to cause many varieties of cancers in both men and women. Can the vaccine prevent the cancer? Do the benefits of this modern vaccine outweigh the unknown long-term effects?

Fibonacci Sequence: *The secret behind nature's beauty.*

Phil Klahs - Senior, Biology/Mathematics, Westminster College

Mentor: Dr. Erin Martin, Mathematics, Westminster College

What is the Fibonacci Sequence? How can a Math equation discovered 800 years ago create patterns in living things? Come and find out the mysteries behind the Fibonacci Sequence and how it shapes the world around you.

Changes in Sport Equipment: *Have they really changed the game?*

Megan Slayton – Senior, Biology, Westminster College

Mentors:

Mr. Rex Sharp, Director, Sports Medicine Director, University of Missouri

Ms. Sasha Schmid – Head Coach, Women Tennis Team, University of Missouri, Columbia

Shoes, protective wear, racquets, clothing, and other pieces of equipment are constantly changing with new materials and new testing. But has all of it really changed the game?

Microscopes & Telescopes: *Seeing the Unseen and the Unreachable*

David Strawhun, Junior, Philosophy/Biology, Westminster College

Mentors:

Dr. Angela Speck, Physics and Astronomy, University of Missouri, Columbia

Dr. Michael Amspoker, Biology and Environmental Studies, Westminster College

From observing the inner workings of a cell to the grand spectrum of far away galaxies, unreachable worlds can now be explored because of the advent of the microscope and the telescope. Come and hear how developments in the studies of lenses, mirrors, and lights paved the way for the creation of these two essential scientific tools.

The other side of the sun: *Can my beautiful tan be harmful?*

Minela Suljicic, Senior, Biology, Westminster College

Mentor: Dr. Suzan Zurowski, Dermatologist, University of Missouri, Columbia

Tanned skin is appealing, but excess sun can cause sunburn, skin cancer and quicker aging. To protect our skin, scientists developed sunscreens. But do they protect us from all the damaging factors of the sun?

From prenatal to advanced age: *Why do we need vitamins?*

Mei Yuan, Senior, Senior, Biology, Westminster

Mentor: Amanda Stevens, Nutritionist, Wellness Program Director

We need 28 different vitamins and minerals to sustain life and optimal health. However, Nutritional needs change as we reach different stages in life. Let's explore what vitamins are essential for each stage of our life. Shall we?