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THE SILVER TSUNAMI IS ON OUR HEELS

Beginning January 1, 2011, the first of the baby boomers turned 65. And every day after that for the next five years about 8,000 Americans will turn 65. The number of people age 65 and older will double between 2010 and 2050. The number of people 85 and older will increase fourfold. Due to advances in healthcare and more active lifestyles, they will live longer than previous generations.

The large cohort of people born between 1946 and 1964, known as the “baby boomers” are driving the “graying” of America. Between 2000 and 2010, the population under age 18 grew at a rate of 2.6%. The growth rate was slower for those aged 18 – 44 (0.6%). However, faster growth rates were seen at older ages. The population 45-64 grew at a rate of 31.5%. Finally, those aged 65 and older grew at a faster rate (15.1%) than those under age 45.

Forty-four states within the next 20 years will have similar aging demographics to those now found in Florida. In 2010, the median age of Pennsylvanians was 40.1. Forty-three (43.4%) of the state’s population was 45 and older, while 56.5% were under 45 years old.



The aging phenomenon is not limited to the United States. According to John Carney at the Kansas City-based Center for Practical Bioethics, by the year 2017 the number of people globally under the age of 5 years old and those above the age of 65 will criss-cross. There will be more elderly people in the world than little ones. Extend the estimates another 30 years forward, and he predicts that the number of elderly compared to their younger cohorts will be twice that number. Europe is aging even faster than the United States. In fact, the only area of the world that is not graying is sub-Saharan Africa.

Virtually every aspect of life as we know it today will be changing soon. The older people of tomorrow will not be the same as the older people of yesterday. They are more demanding and will expect that adaptations will be made to suit their needs. Perhaps automobiles will be designed to accommodate the less agile. Highways will be reded-

igned for slower traffic. Already in California, the Department of Motor Vehicles has created a Senior Ombudsman Program. There are four ombudsmen located in various parts of California to assist seniors in their effort to keep driving for as long as they can do so safely.

Supermarkets and convenience stores are considering changes such as larger shelf tags and lower shelves. CVS/Caremark is already making subtle changes such as adjusting lights to a level that is just right. Walgreens has tethered magnifying glasses to its shelves with stretch cord for those who have difficulty reading the fine print.

Over the next 20 years the 79 million baby boomers will retire from the workplace. As baby boomers age, they will be less likely to sit around playing shuffle board at the retirement center. They will demand joint replacements, medications to improve aches and pains, and bypasses for clogged arteries. There is work to be done in the field of medicine. Some will stay in the workplace longer and others will return to the workplace. For the first time in history, there are four generations of workers in the U.S. labor force. The ability to work effectively with people from different generations with different values and lifestyles will be-

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come increasingly important. So stifle the urge to make blue-haired little old lady jokes because the silver tsunami is on its way.

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WHY HUMAN SKIN COMES IN COLORS

Adapted from article authored by Nina G. Jablonski, professor in the Department of Anthropology at The Pennsylvania State

Skin pigmentation provides one of the best examples of evolution by natural selection acting on the human body. The fact that skin color has been so responsive to evolutionary forces is fascinating, and one that is important for modern human societies to understand. Similar skin colors – both dark and light – have evolved independently multiple times in human history. When we think of how races have been defined in the past using skin color, we can immediately see the problem. When the same skin color has evolved many times independently in different places, its value as a unique maker of identity is eliminated and the race so defined is rendered nonsensical. We are all “hue-mans”!

As modern humans moved around the world in greater numbers and over longer distances in the time between 50,000 and 10,000 years ago, a lot of “fine tuning” occurred in the evolution of skin pigmentation. When we look at a map of predicted human skin pigmentation, we find that all people are varying shades of brown. The intensity of their brownness and their ability to tan is related to the UVR in the place where their ancestors came from.

In the last 10,000 years, we have gotten better and better at protecting ourselves against the extremes of UVR by cultural means. Sewn clothing and constructed shelters now protect us from strong sunlight and augment the protection afforded by natural melanin pigmentation. In

far northern environments, diets composed of vitamin D-rich foods like oily fish and marine mammals supplement the vitamin D we can make in our skin under low UVR conditions. The major problem we face today is that we are able to travel so far so fast. Many people today live or take vacations far away from the lands of their ancestors. This means that, often, our skin color is mismatched to the UVR levels we are experiencing. Darkly pigmented people living in low UVR environments and people working indoors all of the time are at high risk of developing vitamin D deficiencies. Lightly pigmented people living in high UVR environments are at high risk of developing skin cancers. We must recognize these issues in order to avoid major health problems today.

Ultraviolet Radiation and Skin Color

Human skin is mostly hairless and comes in a range of colors. Some people have very dark skin that is almost black, while others have very pale skin that is nearly white. Most other people have skin that has a color somewhere in between. Skin color is remarkably variable in people from place to place, and differences in skin color began to be noticed thousands of years ago when people started traveling widely and engaging in long-distance trade. Observers noted that people who lived under intense sun close to the equator had dark skin and those who lived under weaker sun away from the equator had light skin. But why?

By the middle of the 20th century, observers determined that skin color was most strongly correlated with ultraviolet radiation (UVR) from the sun. UVR, in

fact, accounts for over 87% of the variation in human skin color. So how can it be shown that human skin pigmentation is an actual evolutionary adaptation to UVR? In evolutionary terms, an adaptation is a characteristic of an organism that allows it to reproduce more successfully under certain environmental conditions than other organisms, which do not have the characteristic. We first need to understand exactly what UVR is and what it does.

UVR's Harmful Effects

UVR is a highly energetic and invisible form of solar radiation that is capable of causing a lot of damage to living organisms. Life on earth is mostly protected from damaging UV rays by our atmosphere, but some UVR still gets through and has powerful biological effects. UVR damages DNA, and this activity can eventually cause skin cancer. Skin cancer is bad, but it is rarely fatal and it mostly affects people after their child-bearing years.

Other harmful effects of UVR have potentially much greater effects on reproductive success. Some wavelengths of UVR break down other important biological molecules, such as some forms of folate in the body. Folate is a B vitamin, which is needed to produce DNA and support cell metabolism. We normally get folate from green leafy vegetables, citrus fruits, and whole grains in our diet. Without adequate folate, we can't make sufficient amounts of DNA to maintain normal levels of cell division in our body. Cell division is needed to maintain the function of organs and tissues in our body and is especially important in tissues with a high turnover, like the lining of the gut and the lining of the mouth. Cell division also occurs rapidly in the early em-

bryo and in the production of sperm. During the first few weeks of embryonic development, rapid and precise cell division leads to the establishment of the basic body plan of the body and the development of the early nervous system and circulation. If cell division is slowed or inhibited at this critical time, serious or even fatal birth defects can occur. Protection of the body's folate supplies is therefore important for successful reproduction (Lucock 2000). And successful reproduction is what evolution is all about. How then, was this ensured?

Natural Sunscreens

When it comes to protection against harmful UVR, many biological systems have evolved natural sunscreens. Most natural sunscreens are special molecules which reduce UVR damage by absorbing or scattering UV rays. The pigment called melanin – and especially the most common type in human skin called eumelanin – is one of the most effective natural sunscreens. Eumelanin is intensely dark and has the ability to absorb potentially damaging UVR as well as neutralize harmful chemical byproducts caused by UVR exposure.

Evolution often works by modifying biochemical pathways or structures that are already in existence. Ancestors of the human lineage had the ability to produce eumelanin in the naked skin on their faces and hands when they were exposed to UVR. When our ancestors lost most of their body hair, there was evolutionary pressure to protect exposed skin from the harmful effects of UVR (Jablonski 2004). The solution to this problem was to make dark pigmentation permanent. This was accomplished by natural

selection. Individuals who carried the genetic changes or mutations leading to the production of more protective eumelanin pigment left more offspring behind than those who didn't. Genetic studies have shown that some of the most important changes occurred in a gene called *MC1R*. This gene regulates the production of a protein called the melanocortin-1 receptor that plays an important role in normal pigmentation. All modern humans originated from darkly pigmented ancestors who evolved permanent eumelanin pigmentation in their skin to protect them from the UVR-rich sunshine of equatorial Africa.

Vitamin D Benefits

When some of our modern human ancestors moved away from the most intensely sunny parts of Africa into southern Africa, Asia, and Europe, they encountered lower levels of UVR. This meant that they faced less potential damage to their bodies from harmful radiation, but there was also a downside. UVR is not a universally bad thing: The one important good thing it does is to initiate the process of making vitamin D in the skin. Vitamin D helps us to build and maintain a strong skeleton by regulating the absorption of calcium from the foods that we eat. Without enough vitamin D, bones don't develop properly and are weak. Vitamin D also helps to maintain the health of our immune systems. If we don't get enough vitamin D, our bodies can become physically weak and susceptible to disease. Only certain wavelengths of UVR are capable of starting the process of making vitamin D in the skin, and these are in the UVB range. The equator receives a lot of UVB year round, but north and south of the tropics (23.5° N and 23.5° S) there is much less and it falls in a

highly seasonal pattern. And dark skin with lots of sun-protective melanin slows down the process of making vitamin D in the skin. So these circumstances posed another challenge to our ancestors. How could vitamin D production be maintained in people who were living under low UVB conditions? The answer is – with lighter skin (Jablonski and Chaplin 2000; Chaplin 2004).



The Role of Depigmentation

Light skin is actually depigmented skin. When people started moving away from very sunny places with high levels of UVB to less sunny places with lower levels of UVB, those individuals who had lighter skin were able to stay healthier and leave more offspring. Evolution was at work again. The individuals with lighter skin had specific genetic mutations that resulted in their producing less eumelanin and so having less natural sunscreen in their skin. These new patterns of genetic variation were very successful. We see evidence, in fact, that “selective sweeps” – greatly accelerated periods of evolution by natural selection – led to genes for lighter skin becoming fixed in the population over the course of just a few thousand years.

One of the most interesting and important things about the depig-

mentation process is that it didn't happen just once. Genetic evidence shows that the ancestors of modern western Europeans and the ancestors of modern eastern Asians underwent independent genetic changes leading to the evolution of lighter skin (Norton, Kittles et al. 2007). These changes involved different genetic mutations, which then were favored by natural selection. In other words, depigmentation evolved independently in both of the lineages of modern humans that began to inhabit higher latitudes of the Northern Hemisphere. We also know from the examination of ancient DNA that loss of skin pigmentation as a result of natural selection occurred

in our distant, extinct cousins, the Neanderthals (*Homo neanderthalensis*), who inhabited much of eastern Europe and the region around the Mediterranean during the last ice age (Lalueza-Fox, Rompler et al. 2007).

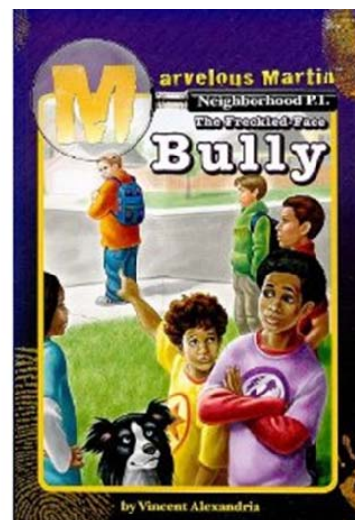
Study of the evolution of skin pigmentation is an important part of the study of human diversity. Different degrees of skin darkness and lightness evolved multiple times in humans as we have dispersed to different places and adapted to local environmental conditions. Today, people are moving over much greater distances, much faster than ever before, and our adaptations are mostly cultural and social, not biological. These cultural and social adaptations have been imperfect, and we still have much to learn about how we as individuals and as human societies can stay healthy in environments far distant from our ancestral homelands.

SUMMERTIME READING

Marvelous Martin Mitchell is a ten-year-old neighborhood private investigator. If something is lost or stolen, if a bully is taking advantage of someone, Marvelous Martin is on the case.

He is good at solving mysteries, including everything from stolen lunches to missing pets. He usually gets paid for his detective work, too. No one likes a bully, and Martin and his friends are no different.

When mean Mark Beeks, the school bully, steals little Freddie Freeman's bike, it is the last straw. Martin and his crew decide to put an end to Mark's bullying days once and for all in this first installment of the Marvelous Martin series.



Reading Level: Ages 9 - 12

Paperback: 64 pages

Publisher: Marimba; 1st edition (March 1, 2010)

Price: \$6.00 new from Amazon.com. Used from \$3.15.

DIVERSITY ACTIVITY

Source: *European Youth Center*

Antonio and Ali

It is said that creative work needs to be done in loneliness. Have you ever tried to create a story with 10 people or more? Here's an opportunity to try it!

Issue Addressed

- Stereotypes

Aims

- To explore the images we have about people from other cultures, social groups, etc.
- To be aware of how these images condition our expectations of people who belong to other groups.

Time

- 30 minutes

Group Size

- 8 – 10
- Note: larger groups can be sub-divided

Preparation

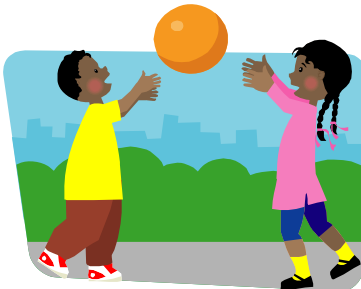
- A ball
- Paper and pen for the observer
- Flip chart and marker pen

Instructions

1. Ask people to sit in a circle.
2. Ask one of them to be the observer. Explain that they have to sit outside the circle and write down the story which is going to be created.
3. Explain to the rest of the group that together they are going to create a co-operative story. For this they are going to use a ball.
4. Then say, "This is the story of Antonio, a young man from Madrid" and pass the ball to a member of the group and invite him to continue with the next one or two sentences of the story, and then to pass the ball to someone else.
5. Continue in this way so that the story is built co-operatively.
6. Allow 10 or 12 turns. Ask for the ball and say "Antonio knows

Ali, a Moroccan boy who also has a story" and pass the ball back to someone in the circle and ask them to start telling Ali's story.

7. Bring the activity to an end after about 10 or 15 minutes.



Debriefing and Evaluation

Ask the observer to read the notes they took about the stories. Then ask the group to say what the stories of Antonio and Ali tell them about their different lives. Follow on with the comments about how this relates to the images we have about young men from Madrid and Morocco. Make notes of the main points on a flip chart. Ask where these images come from. Did everyone have similar images of Spain and Morocco? Why? Why not?

Tips for the Facilitator

It is best if the story is made spontaneously and with a fast rhythm. In this case the observer may have difficulty in noting everything down. This problem may be solved by having a second observer or by recording the story on tape.

It is important that the activity is initially presented simply as the creation of a co-operative story. The names of the characters will lead the group to the theme you want to explore. Therefore, if for instance, you want to do some work around immigrants you should choose names traditionally associated with the majority of immigrants. If you want to deal with images of men and women, choose male and female names.

This activity can be adapted to any situation where there is discrimina-

tion by setting the scene in the first sentence of the story: "this is the story of Frank, a young gay man..." or "this is the story of Maria who has a physical disability..." and compare it to the story of somebody from the mainstream in society.

Variations

1. Divide the group into two sub-groups and ask each group to work on only one of the stories. Afterwards, compare the two. This variation has the advantage that the participants do not suspect that the stories are to be compared.
2. Form two sub-groups and ask each group to draw or write the biography, or an important moment in the life, of one of the characters in the story. Afterwards compare the two biographies or stories.

GLOBAL TRENDS QUIZ

By *Susan K. Lewis* for *Nova*



Populations in both rich and poor countries are on a course to change dramatically in the coming decades. These changes could radically impact economies as well as have enormous consequences for local and global environments. In this quiz, explore what may lie ahead. Test your understanding of the population trends and environmental challenges facing nations around the world. Click the following link, <http://www.pbs.org/wgbh/nova/earth/global-trends-quiz.html>.

DIVERSITY CALENDAR

To learn more about these holidays, go to: <http://diversityeducation.cas.psu.edu> and click on Diversity Calendar.

JULY 2011 HOLY AND CULTURAL OBSERVANCES

- 1..... Canada Day (**Canada**)
- 4..... Independence Day (**USA**)
- 5..... Independence Day (**Venezuela**)
- 9..... Martyrdom of the Bab (**Baha'i**)
- 9..... Independence Day (**Argentina**)
- 13..... Katimat (**Baha'i**)
- 15..... Wassana (**Buddhist**)
- 20..... Independence Day (**Columbia**)
- 20..... Umi no hi (**Japan**)
- 21..... Independence Day – **Belgium**
- 24..... Pioneer Day (**USA**)
- 26..... Independence Day (**Republic of Liberia**)
- 28..... Independence Day (**Peru**)
- 30..... Oh-Harai-Taisai (**Shinto**)
- 31..... Feast of St. Ignatius Loyola (**Spain**)

AUGUST 2011 HOLY AND CULTURAL OBSERVANCES

- 1..... Ramadan Begins (**Islam**)
- 1..... Lughnasad (**Wicca**)
- 8..... Grandparents Day (**USA**)
- 9..... Tisha B'Av (**Jewish**)
- 13..... Raksha Bandhan (**Hindu**)
- 13..... Fravardeghan (**Zoroastrian**)
- 13..... Obon Festival (**Japanese**)
- 14..... Pakistan's Independence Day (**Pakistan**)
- 15..... Assumption (**Christian**)
- 15..... Independence Day (**India**)
- 15..... Independence Day (**South Korea**)
- 15..... Independence Day (**Republic of Congo**)
- 15..... Harvest Moon Festival (**Chinese Thanksgiving**)
- 20..... Asma (**Baha'i**)
- 22..... Janmashtami (**Hindu**)
- 23..... Now-Ruz – Shenshai (**Zoroastrian**)
- 24..... Birth of Prophet Zarathustra – Shenshai (**Zoroastrian**)
- 26..... Laylat al-Qadr (**Islam**)
- 26..... Women's Equality Day (**USA**)
- 30..... Eid-ul-Fitr (**Islam**)

SEPTEMBER 2011 HOLY AND CULTURAL OBSERVANCES

- 1 Ganesh Chaturthi (**Hindu**)
- 2 Paryushana-Parva (**Jain**)
- 2 Independence Day (**Vietnam**)
- 5 Labor Day (**USA**)
- 8 Izzat (**Baha'i**)
- 9 Samvatsari (**Jain**)
- 9 Dashalakshani-Parva (**Jain**)
- 11 Patriot Day (**USA**)
- 12 Gahambar Paitishahem (**Zoroastrian**)
- 15 National Hispanic Heritage Month Begins (**Mexico**)
- 18 Ananta-Chaturdasi (**Jain**)
- 19 Ksamavni (**Jain**)
- 22 National Deaf Awareness (**USA**)
- 23 Autumn Feast for American Indian (**USA**)
- 23 Mabon (**Wicca**)
- 23 Shubun no hi (**Shinto**)
- 27 Mashiyat (**Baha'i**)
- 28 Navratri (**Hindu**)
- 29-30... Rosh Hashanah/New Year (**Jewish**)

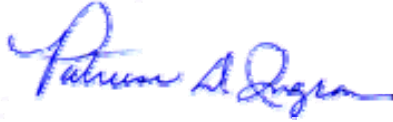


Hispanic Heritage Month (Sept. 15—Oct. 15)



Pediatric Cancer Awareness Month

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