



April 3, 2014

The snow is finally clearing here in the Washington, D.C. area, making way for the throngs of visitors who are arriving for the National Cherry Blossom Festival. April also brings other special events for visitors besides the cherry blossoms! Friday, April 25th is DNA Day. For this celebratory occasion, NHGRI always does something special that focuses on genetics/genomics outreach and education. This year, we will have a significant presence at the USA Science and Engineering Festival at the Washington, D.C. Convention Center, which opens on DNA Day. You can read about this activity and others below in "DNA Day: Inspiring the Future Generation of Scientists."

April's *The Genomics Landscape* features stories about:

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- [Svante Pääbo's Archaic Genomics](#)
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- [Genomic Medicine VI Meeting](#)

All the best,

A handwritten signature in black ink, appearing to read "Eric".

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DNA Day: Inspiring the Future Generation of Scientists



Engaging students at a young age offers our best chance to inspire them about scientific concepts and the process of scientific inquiry. For that reason, NHGRI has an active and robust outreach and education program. On April 25th, we will celebrate the 12th Annual National DNA Day, which commemorates the completion of the Human Genome Project in 2003 and the discovery of DNA's double-helical structure in 1953. NHGRI celebrates DNA Day every year with a number of events. Below, I highlight some of our DNA Day programs, as well as our other student- and teacher-focused activities that bring genomics into the classroom.

DNA Day offers students, teachers, and the public many exciting opportunities to learn about the latest advances in genomics research and to explore how genomics may be meaningful for their lives. More information about DNA Day activities can be found at genome.gov/10506367 or on the DNA Day Facebook page at facebook.com/DNAday.

For example, the DNA Day Ambassador Program (genome.gov/20519691) sends NHGRI researchers and trainees out to middle schools, high schools, and colleges to talk about their work, their career paths, and exciting developments in genetics and genomics research. This program is beneficial for the students and teachers, and also gives NHGRI staff members an opportunity to be involved in science education – a challenging but rewarding endeavor!

This year, the DNA Day Ambassadors will have a strong presence at the USA Science and Engineering Festival (USEF) taking place at the Walter E. Washington Convention Center in Washington, D.C. on April 25-27. The USEF is a national grassroots effort to advance Science Technology Engineering Mathematics (STEM) education and inspire the next generation of scientists and engineers. NIH and NHGRI will be among the 650 exhibitors interacting with students, teachers, and the public – in fact, the NIH will have a very large 'footprint' at the festival, with 19 booths for activities that convey the 'coolness' of our science. At the last USEF in 2012, more than 250,000 individuals participated in the three-day event.



Svante Pääbo's Archaic Genomics



Svante Pääbo holds the skull of a Neanderthal
(Photo: Frank Vincken)

Using cutting-edge DNA isolation and sequencing techniques, Svante Pääbo, Ph.D., has contributed to the understanding of human evolution by analyzing the genomes of our ancestors. Dr. Pääbo recently made presentations at both the NIH and the Smithsonian Institution about his work. His research has shown that Neanderthals interbred with modern humans 50-80 thousand years ago. His genome sequencing efforts have also demonstrated that a set of ancient bones came from a previously unknown species of hominid, now called Denisovans. To view his NIH talk entitled "Archaic Genomics," see youtube.com/watch?v=M7VdRKQuAa8. To view his talk at the Smithsonian National Museum of Natural History entitled "Finding Our Inner Neanderthal," see youtube.com/watch?v=zL_d7b1bsUE.

Current Topics in Genome Analysis Lecture Series



Every 18-24 months, NHGRI hosts a Current Topics in Genome Analysis lecture series aimed at providing an intensive review of some key areas of ongoing genomics research. Geared at the level of first-year graduate students, the 2014 series consists of 14 lectures on successive Wednesdays. In this 11th edition of the series, the lectures convey the notion that both laboratory- and computationally-based approaches are essential for genomics research. The lectures are practical in nature, and are intended for a diverse audience. Videos and handouts from the lectures are available at genome.gov/COURSE2014.

DNA Day will coincide with USEF's Sneak Peak Friday, a day during which visitors can preview the exhibits before they open to the general public on Saturday and Sunday. School groups, homeschoolers, and military families will be coming in large numbers to the festival that day. On all three days of the USEF, our DNA Day Ambassadors will lead attendees through DNA-inspired hands-on activities. To learn more about the upcoming festival, visit usasciencefestival.org/.

In past years, the DNA Day Chatroom has offered an opportunity for students from all over the world to ask NHGRI experts questions about basic and clinical research, careers in genomics, and the ethical, legal, and social implications of genomics research. The chatroom was live from 2005-2012, and in that time, NHGRI researchers and staff answered more than 5,000 questions from thousands of students at hundreds of schools around the world. To view transcripts for each of the past DNA Day Chatrooms, visit genome.gov/27026087. This year, all of our volunteer experts will be at the USEF, so we will not be hosting the chatroom.

Additionally, a variety of online tools are available on the NHGRI web site (genome.gov/20519692) for teachers to use in developing their genetics and genomics curriculum on DNA Day and throughout the year. Two of my favorites are *the Talking Glossary of Genetic Terms* and the *Genomic Careers website*.

The Talking Glossary of Genetic Terms, available in both English (genome.gov/Glossary/) and Spanish (genome.gov/GlossaryS/), helps students, teachers, and the public understand the terms and concepts used in genetics and genomics research. In addition to definitions, experts share their descriptions of terms, and images, 3-D animation, and relevant links are provided for many terms. To engage young learners, the glossary is also available as an [iPhone and iPad App](#).

The *Genomic Careers website* (genome.gov/genomicCareers/) is designed to help students discover the many vocational opportunities in the dynamic fields of genomics and genetics. The site incorporates interactive video and guided tours to explore dozens of career possibilities and to hear from professionals about their careers and their experiences.

The NHGRI Education and Community Involvement Branch (ECIB), part of the Institute's Division of Policy, Communications, and Education, is the catalyst for these student-focused education programs. Working with outside organizations, ECIB reaches students and teachers from across the United States and around the world. To learn more about the full complement of ECIB programs and activities, visit genome.gov/Education/.

Genomic Medicine VI Meeting



NHGRI held its sixth in a series of 'Genomic Medicine' meetings earlier this year in Washington, D.C.; this meeting's focus and name was "Global Leaders in Genomic Medicine." The goals of the meeting were to identify: (1) areas of active translational and clinical genomics research and opportunities for collaborative efforts; (2) common barriers to the implementation of genomics in healthcare; (3) policy areas relevant to advances in genomics; and (4) nations with unique capabilities (such as national healthcare systems) that may allow rapid implementation of genomic medicine and the ability to measure key outcomes.

Participants included researchers in genomic medicine from across the globe, as shown on the map below. The group shared numerous strategies and ideas, which are outlined in the executive summary of the meeting. That summary and a video of the meeting are available at genome.gov/27555775.



Countries represented by participants in the Global Leaders in Genomic Medicine Meeting are highlighted in the above graphic.



Genomics News of Interest

Lectures on the Genomics of Neurology and Psychiatry Begin this Spring
genome.gov/27556434

3-D Changes in DNA May Lead to a Genetic Form of Lou Gehrig's Disease
nih.gov/news/health/mar2014/ninds-05.htm

DNA Analysis Finds New Target for Diabetes Drugs
directorsblog.nih.gov/2014/03/11/dna-analysis-finds-new-target-for-diabetes-drugs/

New Genetic Cause of Children's Liver Disease Discovered
kcl.ac.uk/newsevents/news/newsrecords/2014/March/New-genetic-cause-of-childrens-liver-disease-discovered.aspx

Detecting, Testing, Treating Rare Diseases: Technology Delivers New Era of Personalization
cedars-sinai.edu/About-Us/News/News-Releases-2014/Detecting-Testing-Treating-Rare-Diseases-Technology-Delivers-New-Era-of-Personalization.aspx

Study of Complete RNA Collection of Fruit Fly Uncovers Unprecedented Complexity
news.indiana.edu/releases/iu/2014/03/droso-phila-transcriptome-diversity-uncovered.shtml

Researchers Discover Underlying Genetics, Marker for Stroke, Cardiovascular Disease
nih.gov/news/health/mar2014/nhgri-20.htm

Genome Advances of the Month

The Evolutionary Mark of *Y. pestis* and the Black Death
genome.gov/27556491

Circulating Tumor DNA: A New Generation of Cancer Biomarkers
genome.gov/27556716

NIH News of Interest

Online Data Submission and Access to the NIH Database of Genotypes and Phenotypes (dbGaP)
grants.nih.gov/grants/guide/notice-files/NOT-OD-14-065.html

NIH Opens Research Hospital to Outside Scientists
nih.gov/news/health/mar2014/nichd-13.htm

AARP: A Conversation With Francis Collins
aarp.org/health/brain-health/info-2014/francis-collins-brain-initiative-qa.html?sf23563737=1

The Future of Biomedical Research: Dr. Francis Collins Testifies before the House Appropriations Subcommittee
nih.gov/about/director/congressionalhearings/03262014biomedicalresearch.htm

Fellowship Opportunities

Apply for NHGRI-ASHG's New Genetics & Education Fellowship – Deadline April 25
ashg.org/pages/education_fellowship.shtml

Apply for NHGRI-ASHG's Genetics & Public Policy Fellowship – Deadline April 25
ashg.org/pages/policy_fellowship.shtml

New Genomics Videos

Genome and Transcriptome Dynamics in Cancer Cells – Thomas Ried
youtube.com/watch?v=rSR5r6w9p5E

The Genomic Landscape *Circa 2014* – Eric Green
youtube.com/watch?v=Lgm5dA1D_pc&list=PL1ay9ko4A8skSH3BBXU5LarkOn3nJzin6&index=2

Biological Sequence Analysis II – Andy Baxevanis
youtube.com/watch?v=QE9TysFEQC&list=PL1ay9ko4A8skSH3BBXU5LarkOn3nJzin6

Genetics and Genomics of Craniosynostosis Syndromes – Max Muenke
youtube.com/watch?v=7YGo1xYkPA&list=PL1ay9ko4A8slXcrRvAjn5zTm0DBYGiyHF&index=2

Is Genetic Information Different? – Drs. Susan Wolf and Robert Green
youtube.com/watch?v=5mYlwiBR47E&list=PL1ay9ko4A8smgQqLL46-ouk8Pk1HrNoJB

Genome-Scale Sequence Analysis – Tyra Wolfsberg
youtube.com/watch?v=wax0w97cLt0&index=4&list=PL1ay9ko4A8skSH3BBXU5LarkOn3nJzin6

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