

# The Explorer

June 2017

Vol. 43, No. 5

The Official Newsletter of the  
National Association of Dental Assistants

## HPV AND ORAL CANCER

Oral cancer is on the rise and while tobacco and alcohol consumption remain the most prominent causes, the number of cases caused by the human papillomavirus (HPV) has been increasing. The Centers for Disease Control and Prevention (CDC) reports that 4% of all adults in the United States age 18 to 69 years have one or more of the 14 high-risk types of HPV known to cause oral cancer.

According to the data, from the National Health and Nutrition Examination Survey 2011-2014, 7.3% of all adults in that age range have one or more of the 37 types of oral HPV, which are sexually transmitted. Most sexually active adults acquire the virus at some point in their lives, and they typically pass it on within 2 years without symptoms or complications.

The high-risk types of virus are cause for concern, though. By gender, 6.8% of men and 1.2% of women age 18 to 69 years carry high-risk HPV. Oral cancers caused by HPV are oc-

(Continued on page 2)

### Inside this issue ...

Your Dominant Hand may Determine the Shape of your Face .....	2
Toothpaste Massage .....	2
Best and Worst States for Dentistry .....	3
A Crooked Bite May Indicate Life Expectancy .....	3
Perfecting Implants .....	4

## FINDING THE GENE FOR CLEFT LIP

A group of researchers has found that three siblings born with cleft lip and palate share a common gene mutation associated with the birth defect. The gene intraflagellar transport 88 (IFT88) ensures transportation antennae (cilia) on embryonic cells travel to the right place, enabling the development of cartilage, bone and smooth muscle in the face and skull.

"Finding this birth defect in every single child in a family is like catching lightning in a bottle because it allowed us to pinpoint the gene mutation that is probably responsible," said Yang Chai, senior author of the study and director of the Center for Craniofacial Molecular Biology at the Herman Ostrow School of Dentistry of USC. "Our finding that the gene IFT88 is involved in cleft lip and palate is unlikely to be mere coincidence."

However, because this study involved only three children, Chai said more investigation is needed to find a causal relationship.

The study, a collaborative effort between the Ostrow School of Dentistry, the Keck School of Medicine of USC, Children's Hospital Los Angeles and the nonprofit Operation Smile, was published in the journal *Human Molecular Genetics* in January.

Researchers went through 32,061 unique gene variations to identify IFT88. The study of IFT88 may eventually have far-reaching implications. Other congenital diseases tied to a genetic disorder of cilia on embryonic cells include retinal degeneration, hearing defects, polydactyly (extra fingers or toes at birth) and brain malformations.

Operation Smile, an international nonprofit that provides



free facial surgeries in developing countries, found and provided support to three siblings, two boys and a girl, in Mexico who were born with cleft lip and palate. Their mother did not have the congenital disorder, but their father did. Surgeons at CHLA repaired the orofacial abnormality.

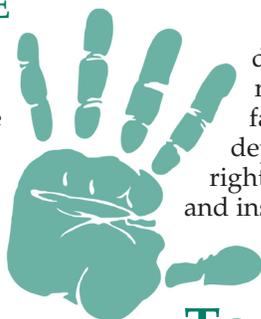
In America, cleft lip and palate is the most common birth defect, according to data from the Centers for Disease Control and Prevention. An estimated 7,000 children are born with cleft lip and palate every year.

### Journal Reference:

1. Hua Tian, Jifan Feng, Jingyuan Li, Thach-Vu Ho, Yuan, Yang Liu, Frederick Brindopke, Jane C. Figueiredo, William Magee, Pedro A. Sanchez-Lara, Yang Chai. Intraflagellar transport 88 (IFT88) is crucial for craniofacial development in mice and is a candidate gene for human cleft lip and palate. *Human Molecular Genetics*, 2017; ddx002 DOI: 10.1093/hmg/ddx002

# YOUR DOMINANT HAND MAY DETERMINE THE SHAPE OF YOUR FACE

Individuals with a slender lower face are about 25 percent more likely to be left-handed. This unexpected finding was identified in 13,536 individuals who participated in three national surveys conducted in the United States. This association may shed new light on the origins of left-handedness, as slender jaws have also been associated with susceptibility to tuberculosis, a disease that has shaped human evolution and which affects 2 billion people today.



described as tuberculosis-resistant, having robust facial features, and typically depicted in art as showing right-hand dominance with tools and instruments.

## Journal Reference:

1. Philippe P. Hujuel. Handedness and lower face variability: Findings in three national surveys. *Laterality: Asymmetries of Body, Brain and Cognition*, 2017; 1 DOI: 10.1080/1357650X.2017.1317265

Slender jaws are a common facial feature, affecting about one in five U.S. adolescents. People with slender jaws typically have a lower jaw which bites a bit backward, giving them a convex facial profile and what's commonly called an overbite.

This observation may explain curious geographical coincidences. For example, the United Kingdom was described as the tuberculosis capital of Western Europe, and has a high prevalence of left-handedness and people with slender faces. Other populations, such as the Eskimos, were in the 19th century

revealed that those who used a high-fluoride toothpaste three times a day had four times better fluoride protection in the mouth than those who used standard toothpaste twice a day. Professor Downen Birkhed also tested a new method which involves rubbing toothpaste onto your teeth with a finger. This 'massage' method proved to be at least as effective as a third brushing in increasing the amount of fluoride in the mouth. The study researchers found the massage method was a good way to get a third shot of fluoride but it was not a substitute for brushing in the morning and at night. The study results were published in *Acta Odontologica Scandinavica*.

Eight years ago, a new brand of toothpaste was launched in Sweden with more than three times as much fluoride as standard toothpaste. Available without prescription, it is aimed primarily at those with high caries risk. Researchers at the University of Gothenburg's Sahlgrenska Academy have now performed the first scientific evaluation of the effect of this so called "high-fluoride toothpaste." During the research, Anna Nordström, dentist, PhD and researcher at the Sahlgrenska Academy, developed a new method that quadruples the level of protection. In the study, 16 volunteers tested a variety of brushing techniques, using either high-fluoride or standard toothpaste, and brushing either two or three times a day. According to Nordström, the study

## TOOTHPASTE MASSAGE

Letters and submissions are welcome. Writing/Editing: Denise Allen Membreno Design: Christy Carmody

## The Explorer

The information in this newsletter should not be construed as legal or professional advice or opinion of the association or its editorial staff. We make no guarantee, nor assume any responsibility for the accuracy, correctness or thoroughness of this information or its applicability regarding any specific or factual situation. Periodicals postage paid at Falls Church, VA, and other mailing offices. Subscription rate: \$20 of annual dues; non-member, \$25/year in U.S., \$30/year (U.S. funds) in Canada and \$35/year (U.S. funds) for other countries. POSTMASTER: Send change of address to: NADA, 900 S. Washington Street, Suite G-13, Falls Church, VA 22046. Fax: (703) 533-1153.

The information in this newsletter should not be construed as legal or professional advice or opinion of the association or its editorial staff. We make no guarantee, nor assume any responsibility for the accuracy, correctness or thoroughness of this information or its applicability regarding any specific or factual situation. Periodicals postage paid at Falls Church, VA, and other mailing offices. Subscription rate: \$20 of annual dues; non-member, \$25/year in U.S., \$30/year (U.S. funds) in Canada and \$35/year (U.S. funds) for other countries. POSTMASTER: Send change of address to: NADA, 900 S. Washington Street, Suite G-13, Falls Church, VA 22046. Fax: (703) 533-1153.

The information in this newsletter should not be construed as legal or professional advice or opinion of the association or its editorial staff. We make no guarantee, nor assume any responsibility for the accuracy, correctness or thoroughness of this information or its applicability regarding any specific or factual situation. Periodicals postage paid at Falls Church, VA, and other mailing offices. Subscription rate: \$20 of annual dues; non-member, \$25/year in U.S., \$30/year (U.S. funds) in Canada and \$35/year (U.S. funds) for other countries. POSTMASTER: Send change of address to: NADA, 900 S. Washington Street, Suite G-13, Falls Church, VA 22046. Fax: (703) 533-1153.

The information in this newsletter should not be construed as legal or professional advice or opinion of the association or its editorial staff. We make no guarantee, nor assume any responsibility for the accuracy, correctness or thoroughness of this information or its applicability regarding any specific or factual situation. Periodicals postage paid at Falls Church, VA, and other mailing offices. Subscription rate: \$20 of annual dues; non-member, \$25/year in U.S., \$30/year (U.S. funds) in Canada and \$35/year (U.S. funds) for other countries. POSTMASTER: Send change of address to: NADA, 900 S. Washington Street, Suite G-13, Falls Church, VA 22046. Fax: (703) 533-1153.

The information in this newsletter should not be construed as legal or professional advice or opinion of the association or its editorial staff. We make no guarantee, nor assume any responsibility for the accuracy, correctness or thoroughness of this information or its applicability regarding any specific or factual situation. Periodicals postage paid at Falls Church, VA, and other mailing offices. Subscription rate: \$20 of annual dues; non-member, \$25/year in U.S., \$30/year (U.S. funds) in Canada and \$35/year (U.S. funds) for other countries. POSTMASTER: Send change of address to: NADA, 900 S. Washington Street, Suite G-13, Falls Church, VA 22046. Fax: (703) 533-1153.

The information in this newsletter should not be construed as legal or professional advice or opinion of the association or its editorial staff. We make no guarantee, nor assume any responsibility for the accuracy, correctness or thoroughness of this information or its applicability regarding any specific or factual situation. Periodicals postage paid at Falls Church, VA, and other mailing offices. Subscription rate: \$20 of annual dues; non-member, \$25/year in U.S., \$30/year (U.S. funds) in Canada and \$35/year (U.S. funds) for other countries. POSTMASTER: Send change of address to: NADA, 900 S. Washington Street, Suite G-13, Falls Church, VA 22046. Fax: (703) 533-1153.

diagnosed until the late stages. According to the CDC, in 2012, there were nearly 40,000 new cases of cancer of the oral cavity and pharynx diagnosed in the United States and nearly 9,000 deaths. The 5-year survival rate for these cancers is about 59%.

## Journal Reference:

1. Anna Nordström, Downen Birkhed. Effect of a third application of toothpastes (1450 and 5000 ppm F), including a 'massage' method on fluoride retention and pH drop in plaque. *Acta Odontologica Scandinavica*, 2012; 1 DOI: 10.3109/00016357.2011.654238

**"A smile is a curve that sets everything straight."**

— Phylliss Diller, comedian

## HPV AND ORAL CANCER

(Continued from page 1)

diagnosed until the late stages. According to the CDC, in 2012, there were nearly 40,000 new cases of cancer of the oral cavity and pharynx diagnosed in the United States and nearly 9,000 deaths. The 5-year survival rate for these cancers is about 59%.

diagnosed until the late stages.

According to the CDC, in 2012, there were nearly 40,000 new cases of cancer of the oral cavity and pharynx diagnosed in the United States and nearly 9,000 deaths. The 5-year survival rate for these cancers is about 59%.

## BEST AND WORST STATES FOR DENTISTRY

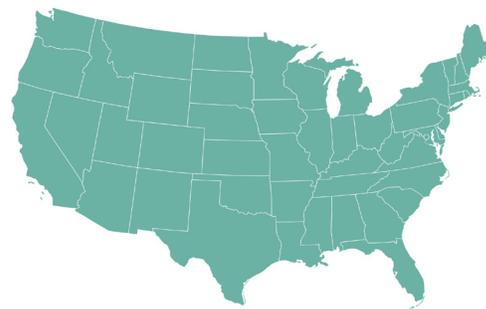
Where do you live and work? Are you residing in the place that is conducive to your profession? DentalProductsReport.com has rated all 50 states. They used a set of 11 criteria to determine the rankings. They are: median income, percentage of population who visited the dentist in the past year, population's dental habits, population's level of oral health, percentage of population that is uninsured, percentage of population on Medicaid, cost of living, education level of patients, crime statistics, population's overall well-being, and population's financial savviness.

Minnesota received DentalProductsReport.com's top ranking. The Land of 10,000 Lake's top ranking is because of its high rankings in education, dentist-visiting residents and financial savvy. According to Dental Products Report, Minnesota has the fourth lowest

rate of uninsured residents, and has the lowest percentage of adults with poor or fair oral condition in the entire country.

Following just behind is Connecticut. The ranking is due to the state having the fifth highest median income, and third-lowest crime ranking in the country. Dental Products Reports also found residents visited the dentist in the past year more than folks in any other state. Its biggest drawback is that it has the fourth-highest cost of living in the United States.

Iowa ranks third with the third-best dental habits in the country. Dental Products Reports found the Hawkeye state is in the middle of the pack for median income and education levels, high insurance percentages and low crime statistics contributed to the state's number three ranking. Iowa ranked 12th overall for dental visits and finished 14 out of 50 for general



wellbeing. Massachusetts and New Hampshire were tied with Iowa for third. The rest of the top ten in order are: New Jersey, Wisconsin, Virginia, Maryland, and Rhode Island.

So, which states are holding up the bottom of the list? Louisiana is at 48. Mississippi is ranked 49th. Arkansas comes in last among the states for oral health. You can see the complete ranking at [www.dentalproductsreport.com/dental/article/best-and-worst-states-work-dental-practice-2017?page=0,0](http://www.dentalproductsreport.com/dental/article/best-and-worst-states-work-dental-practice-2017?page=0,0).

## A CROOKED BITE MAY INDICATE LIFE EXPECTANCY

Women have long been told of the importance of prenatal care. Research has repeatedly shown the first 1,000 days after conception strongly influence a person's life expectancy and disease susceptibility. Low birth weight has been the primary marker indicating prenatal stress, but low birth weight is a marker only until birth.

New research from University of Washington (UW) investigators suggests that an asymmetric lower face is a novel marker that also captures early life stresses that occur after birth. Asymmetries in the skull and teeth have been used for decades by anthropologists to mark environmental stress, but they have only rarely been used in living populations, Philippe Hujuel, the corresponding author said.

Hujuel, a professor in the UW School of Dentistry, described a crooked, or asymmetric, bite as the teeth biting backward or forward on one side of the face and normally on the other side. Backward-biting asymmetries, the most

common lower-face asymmetry in the U.S. population, were found to fluctuate randomly between the left and right sides of the face. Such randomness is evidence for early life stress, he said.

Lower-face asymmetries can be assessed by looking at the dental bite in the permanent teeth -- an exam that can be completed in seconds and with more certainty than a mother's recall of birth weight. Hujuel emphasized that crooked teeth, overbites and underbites are different than an asymmetric bite. Those conditions can be associated with asymmetric and symmetric bites, the latter of which is largely a reflection of genetics, not environmental stress.

Hujuel, Erin Masterson and Anne-Marie Bollen researched data gathered from 1966 to 1970, a sample of 6,654 12- to 17-year-olds involved in a National Health Examination Survey. The study found that one in four of the U.S. adolescents had lower-face asymmetries. Hujuel said lower-face asymmetries were common in a generation that

became typified by an epidemic of diabetes and obesity in adulthood.

In the 1970's, dental researchers in charge of designing health surveys in the United States began to disregard the value of diagnosing facial asymmetry, and stopped taking those measurements. This resulted, Hujuel said, in an inability to reliably track biological trends in the U.S. He adds there is not current information on the prevalence of lower-face asymmetries in the U.S. population.

Further research is needed to identify whether lower-face asymmetries are predictive of chronic diseases in living populations in the same way that skull asymmetries have been associated with degenerative diseases in long-deceased populations.

### Journal Reference:

1. Philippe P. Hujuel, Erin E. Masterson, A-M Bollen. Lower face asymmetry as a marker for developmental instability. *American Journal of Human Biology*, 2017; e23005 DOI: 10.1002/ajhb.23005

## PERFECTING IMPLANTS

Researchers have found a way to make implants more successful. According to the American Academy of Implant Dentistry (AAID), 15 million Americans have crown or bridge replacements and three million have dental implants, with this latter number rising by 500,000 a year. The AAID estimates that the value of the American and European market for dental implants will rise to \$4.2 billion by 2022.

Dental implants are a successful form of treatment for patients, yet according to a study published in 2005, five to 10 percent of all dental implants fail. The reasons for this failure include: mechanical problems, poor connection to the bones in which they are implanted, and infection or rejection. When failure occurs, the dental implant must be removed.

One of the most common reasons for dental implant failure is peri-implantitis. This is the destructive inflammatory process affecting the soft and hard tissues surrounding dental implants. It occurs when pathogenic microbes in the mouth and oral cavity develop into biofilms, which protects them and encourages growth. Peri-implantitis is caused when the biofilms develop on dental implants.

A research team comprising scientists from the School of Biological Sciences, Peninsula Schools of Medicine and Dentistry and the School of Engineering at the University of Plymouth, have joined forces to develop and evaluate the effectiveness of a new nanocoating for dental implants to reduce the risk of peri-implantitis. The results of their work are published in the journal *Nanotoxicology*.

In the study, the research team created a new approach using a combination of silver, titanium oxide and hydroxyapatite nanocoatings. The application of the nanocoating to the surface of titanium alloy implants successfully inhibited bacterial growth and reduced the formation of bacterial biofilm on the surface of the implants by 97.5 percent.

Not only did the combination result in the effective eradication of

infection, it created a surface with anti-biofilm properties which supported successful integration into surrounding bone and accelerated bone healing. This research has in effect developed a potential solution to the most common failure of dental implants. It has not been put into clinical practice.

Nanoscience activity at the University of Plymouth is led by Professor Richard Handy, who has represented the United Kingdom on matters relating to the Environmental Safety and Human Health of Nanomaterials at the Organization for Economic Cooperation and Development (OECD).

"As yet there are no nano-specific guidelines in dental or medical implant legislation and we are, with colleagues elsewhere, guiding the way in this area," said Handy.

"Current strategies to render the surface of dental implants antibacterial with the aim to prevent infection and peri-implantitis

development, include application of antimicrobial coatings loaded with antibiotics or chlorhexidine," said Dr Alexandros Besinis Lecturer in Mechanical Engineering at the School of Engineering, University of Plymouth. "Such approaches are usually effective only in the short-term, and the use of chlorhexidine has also been reported to be toxic to human cells. The significance of our new study is that we have successfully applied a dual-layered silver-hydroxyapatite nanocoating to titanium alloy medical implants which helps to overcome these risks."

### Journal Reference:

1. A. Besinis, S. D. Hadi, H. R. Le, C. Tredwin, R. D. Handy. Antibacterial activity and biofilm inhibition by surface modified titanium alloy medical implants following application of silver, titanium dioxide and hydroxyapatite nanocoatings. *Nanotoxicology*, 2017; 1 DOI: 10.1080/17435390.2017.1299890



## Exciting new member benefits just in time for your vacation planning!

**Funjet Vacations** – Save 5%. Funjet vacations specializes in providing travelers with vacation packages that meet their needs, delivered with unparalleled customer care and at an exceptional value. With "Price Match Plus" you are guaranteed to have the most cost efficient trip or we'll match it. Call 1-800-282-0276 and mention code SAVE5 or visit <http://tinyurl.com/TNT5GO>.



**CruisesOnly** – World's Largest Cruise Agency - NADA has partnered with CruisesOnly to offer the lowest prices in the industry, 110% Best Price Guarantee. Shop and compare thousands of cruises from 25 of the world's top fleet departing from 22 U.S. ports. Visit <http://tinyurl.com/Cruiseforme>.

