Physicists shed light on geographic tongue
Research provides new insights into dynamics of inexplicable condition

REHOVOT, Israel: Physicists at the Weizmann Institute of Science in Israel have clarified the intricate dynamics underpinning a tongue condition that has puzzled the medical community for decades. Known as benign migratory glossitis or geographic tongue (GT), the condition affects around 2 per cent of the global population and is characterised by evolving red patches on the surface of the tongue that may resemble a map.

The red patches appear due to loss of one of the four types of lingual papillae, tiny hair-like protrusions that cover the surface of the tongue. The affected type, called filiform papillae, is mainly distributed in the anterior two-thirds of the tongue. Despite extensive research, the exact cause of GT, a benign and mostly painless condition, remains unknown.

In their study, the researchers performed a number of numerical simulations to closely examine and visualise the development of GT, and devised a new way of identifying the severity of individual cases. “We hope these results can be used by physicians as a practical way of assessing the severity of the condition based on the characteristic patterns observed,” said lead author of the study Dr. Gabriel Seiden, a researcher at the Weizmann Institute of Science in Rehovot in Israel.

Graphene slows dental diseases
Chinese researchers have found that graphene oxide, a compound of carbon, oxygen and hydroxide, is effective against a number of pathogens that cause dental caries and periodontitis. As previous studies have demonstrated that graphene oxide can inhibit the growth of some bacterial strains without harming mammalian cells, they investigated the material’s antimicrobial properties for three specific oral bacteria that are associated with tooth decay and certain forms of periodontal disease.

For the study, the researchers used graphene oxide nano-sheets and observed that they significantly slowed the growth of dental pathogens. Tests using electron microscopy showed that the cell walls and membranes of the bacteria had lost their integrity. They thus concluded that graphene oxide nano-sheets could have potential application in dental care and therapy.

Given the rise in antibiotic resistance over the past decade, they also believe that their findings could help address the need for a new approach to treating bacterial diseases.

Fluoridation linked to ADHD
Fluorinated water could be an environmental risk factor for attention deficit hyperactivity disorder (ADHD), one of the most common neurodevelopmental disorders of children today. In a study, researchers from Canada found that the prevalence of ADHD increased with wider exposure to fluoridated water in the US.

AP slow in adoption of CAD/CAM
The latest report by international market research and consulting group iData Research shows that the penetration rate of CAD/CAM prostheses in the Asia Pacific region has been limited by difficult economic circumstances in countries like Japan, South Korea, Australia and China. In particular, the economic recession has slowed unit sales growth as dental laboratories increasingly prefer laboratories facing budget constraints. Growth is expected to expand networks of scanners to support their full in-lab CAD/CAM system, the report states. The Asia-Pacific market for dental prostheses and CAD/CAM devices is currently valued at over US$10 billion.
SPIRALS EVOLVE IN REGIONS OF THE AFFECTED, THE TONGUE THEN HEALS CONTINUE TO GRADUALLY EXPAND IN CIRCLES SPOTS ON THE TONGUE, CAN CONSTITUTE DISTINGUISHING CHARACTERISTICS OF THE DYNAMICS OF GT, ACCORDING TO THE RESEARCHERS.

In their study, they give the example of GT observed in a 1-year-old boy who developed the characteristic lesions on multiple occasions along the tongue’s edge adjacent to the growing teeth, implying that the continuous rubbing of the tongue against the gingiva may trigger the condition.

“Going forward, we intend to collaborate with physicians and dentists who treat GT patients to obtain valuable—and often scarce—empirical data regarding the dynamic evolution of the condition,” Seiden explained. “This will allow for further, more quantitative explorations of GT, and may eventually lead to a firmer understanding of what causes the condition.”

“Just as the development of forest fires can be strongly affected by external conditions, such as the strength of the wind, conditions surrounding the tongue may have important consequences for the dynamics of GT,” Seiden continued.

“The study found that GT can spread across the tongue in two different ways, each of which has distinct characteristics that could be used to diagnose severity. Researchers discovered that at the onset, GT tears across the entire region, healing patch by patch. After a wave has passed through, the affected area may reconstitute before it can support the passing of another wave. In this way, a fire can spread through a forest, but it cannot return to a burnt spot until the vegetation has regrown. Thus, the propagation of spiral patterns in regions of the affected tongue then heals, the tongue then heals, but it cannot return to a region that has been previously affected. Overall, a fire can spread through a forest, but it cannot return to a burnt spot until the vegetation has regrown. This places wine-tasters, for example, at increased risk of tooth wear, the researchers said. Previous research only found a softening effect in teeth exposed to wine after 1 hour.

Professional tasters usually test up to 150 wines per day, and wine judges even more. With repetitive tasting, the lingual papillae can be eroded, remaining in the mouth for up to 60 seconds before it is spat out.

In order to assess the demineralisation during wine-tasting, the team simulated the conditions of the process in a laboratory, exposing extracted third molars repeatedly to white wine and artificial saliva. After 1 and 90 minutes, a nano-scratch test was conducted and the result was an increased scratch depth.

Surface roughness of the enamel increased by almost 200 per cent. Reflecting on the findings, the researchers recommended that professionals take early preventative measures, including the application of remineralisation agents, such as calcium, phosphate and fluoride, to minimise the risks of erosion. Cheewing gum and skipping toothbrushing the morning before the wine-tasting are additional measures that could lessen the occupational hazard, they said in the report.

"After a wine tasting, the teeth are likely to be much softer, so we recommend rinsing with water, and when it comes time to clean the teeth, just put some toothpaste on your finger and cleaning with that," remarked Associate Professor Sue Bastian from the university’s School of Agriculture, Food and Wine, which also teaches wine-making, about the results. “Cleaning with a brush when teeth are soft runs the risk of damaging the enamel.”

With pH values of 3 and 4, the acidity of wine is comparable to that of many soft drinks, which, owing to their high concentration of organic acids, are reported to be the main cause of the increase in tooth wear around the globe, particularly among children. Most professional wine organisations, however, currently do not recommend any special precautions for their members.

The students approached the problem of GT as if it were an exciting, mesmerisingly distributed, dynamic system with the ability to propagate signals without damping. A forest fire is a classic example of an excitable medium: it travels as a wave from its initiation point and regenerates with every tree it ignites. This is in contrast to passive wave propagation, which is characterised by a gradual damping of the signal amplitude due to friction. However, after a wave has passed through, excitable media have to reconstitute before they can support the passing of another wave. In this way, a fire can spread through a forest, but it cannot return to a burnt spot until the vegetation has regrown.

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SINGAPORE: At the sixth International Congress on Adhesive Dentistry (IAD), held recently in Bangkok in Thailand, dental consumables manufacturer DENTSPLY launched "one", its collection of premium, high-performance restorative materials that were designed not only to be easy to use, but also to allow dentists to achieve outstanding clinical results.

According to the company, the "one" collection consists of ceram.x one, a composite available in different translucencies for everyday aesthetics (ceram.x one UNIVERSAL) and highly aesthetic restorations (ceram.x one DENTIN & ENAMEL). It also contains two bonding systems, one for total-etch applications (prime&bond one ETCH & RINSE) and one for self-etch, selective enamel etch and total-etch applications (prime&bond one SELECT).

Covering the full VITA (VITA Zahnfabrik) shade range with just seven shades, ceram.x one UNIVERSAL is extremely simple and easy to use, the company said. With intermediate translucency ranging between natural enamel and dentine, ceram.x one UNIVERSAL offers a powerful chameleon effect to facilitate natural, lifelike restorations and is ideal for everyday use. While many composite systems offer a myriad of shades and translucencies, making it difficult to match the color of the natural teeth, ceram.x one DENTIN & ENAMEL replicates the structure of natural teeth utilizing just two translucencies: dentine shades that mimic natural dentine and enamel shades that mimic natural enamel. Also covering the full VITA shade range, it enables highly aesthetic, natural restorations with only four dentine and three enamel shades.

It is difficult to achieve an optimum level of dentine moisture prior to the application of an adhesive. Overwet or overdry dentine can lead to insufficient sealing, resulting in microleakage and post-operative sensitivity. Prime&bond one ETCH & RINSE offers a technique-tolerant solution, providing high bond strength and reliable performance even on overwet or overly dry dentine, according to DENTSPLY.

The literature often recommends using a self-etch adhesive in cavities with a large proportion of exposed dentine in order to minimize the risk of post-operative sensitivity. However, etch-and-rinse adhesives have shown superior long-term results on enamel. Prime&bond one SELECT combines the advantages of both techniques. It provides high bond strength with all etching techniques (self-etch, etch and rinse, and selective enamel etch) and delivers reliable performance even on overly dry dentine, resulting in virtually no post-operative sensitivity.

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Difficulties mastered are opportunities won

These words from one of Britain's most famous statesman Winston Churchill aptly describe the recent relaunch of Dental Tribune UK. The new edition is the result of months of reorientation and repositioning that will see the return of an active participant in the British dental publishing scene. At this opportunity, we would like to thank our former partners for their years of commitment and wish them best of luck for their future endeavours.

Our publishing group has come a long way since the first edition of Dental Tribune UK was launched in 2007. From a few publishers operating in key markets only, it has grown into a large-scale global operation with offices and representatives in almost every corner of the globe; to borrow a famous historical phrase, the sun never sets on the Dental Tribune International (DTI) network, as somewhere in the world a Dental Tribune publisher or partner is always working. And our expansion is still far from over; coinciding with the relaunch of the UK edition, Dental Tribune has introduced its first-ever Nordic edition at the SCANDENFA show in Copenhagen in Denmark to serve all markets in Scandinavia and Finland. Developed as a pan-regional title, the new edition will cover and analyse everything dentistry in the region, as well as internationally.

With four editions per year and published in English only, it builds on the substantial knowledge and publishing expertise that has distinguished Dental Tribune partners in almost every corner of the world for the last two decades. Moreover, last year saw the successful première of the Digital Dentistry Show, a show within a show expo format that will see further geographical and topical expansion in 2015.

For information and updates on all our exciting new projects, I invite you to visit our website at www.dental-tribune.com.

Sincerely,
Daniel Zimmermann
Group Editor
Dental Tribune International
Increasing number of European adolescents brush teeth twice a day

GHENT, Belgium/JYVÄSKYLÄ, Finland/COPENHAGEN, Denmark: An international team of researchers has studied the daily frequency of toothbrushing in adolescents from 20 different countries and regions in Europe between 1994 and 2010. The researchers found that the prevalence of brushing more than once a day has increased in most of the surveyed countries and regions over time, with the highest increase observed in Estonia, Latvia, Russia, Finland and Flemish Belgium.

“From a public health perspective, improvement of toothbrushing habits is important in preventing the most common dental diseases, but even more so in reducing common risk factors for the main non-communicable diseases,” the researchers stated in the study. According to them, brushing twice a day is one of the most important self-care methods and has become a universal recommendation worldwide in order to maintain good oral health. In light of recent findings regarding the association between oral disease and the four main non-communicable diseases—diabetes, cancer, cardiovascular disease and respiratory disease—the importance of regular toothbrushing has increased even more.

For their study, the researchers from the University of Jyväskylä in Finland, Ghent University in Belgium and the National Institute of Public Health in Denmark used data from five consecutive Health Behaviour in School-aged Children (HBSC) surveys conducted between 1994 and 2010.

The HBSC research network is an international alliance of researchers that collaborate on the survey of schoolchildren. The HBSC collects data on 11-, 13- and 15-year-old boys’ and girls’ health and well-being, social environments and health behaviours. The researchers chose these age groups because they mark a period of increased autonomy that can influence how a person’s health and health-related behaviours develop. The cross-national survey, initiated in 1982, is conducted every four years in 44 countries and regions across Europe and North America in collaboration with the World Health Organization’s Regional Office for Europe.

The scientists determined the frequency of toothbrushing by analysing the adolescents’ answers to the mandatory HBSC question in this regard, including study year, country, sex and age as variables. The 20 countries considered in the study included various central, eastern and northern European countries, as well as Russia and Canada.

In most of these countries, the prevalence of brushing twice a day has increased significantly, while the cross-national differences have diminished. In 1994, the rate of adolescents brushing their teeth twice a day ranged from 50 to 86 per cent. In 2010, between 50 and 81 per cent of the surveyed children said that they brushed twice every day.

In 1994, the countries with the lowest prevalence of brushing twice a day included Lithuania (30 per cent), Latvia (54 per cent), Russia (58 per cent), Finland (56 per cent), Estonia (42 per cent) and Flemish Belgium (45 per cent). By 2010, between 50 and 60 per cent of the children in all of these countries brushed twice a day.

The countries with the highest rate of adolescents brushing their teeth twice a day in 1994 were Sweden (86 per cent), Denmark (80 per cent), Norway (75 per cent) and Germany (75 per cent). By 2010, Sweden’s rate had decreased to 81 per cent and Denmark’s to 76 per cent. Norway’s rate remained at 75 per cent, while Germany’s increased to 80 per cent.