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A QUARTERLY NEWS BULLETIN

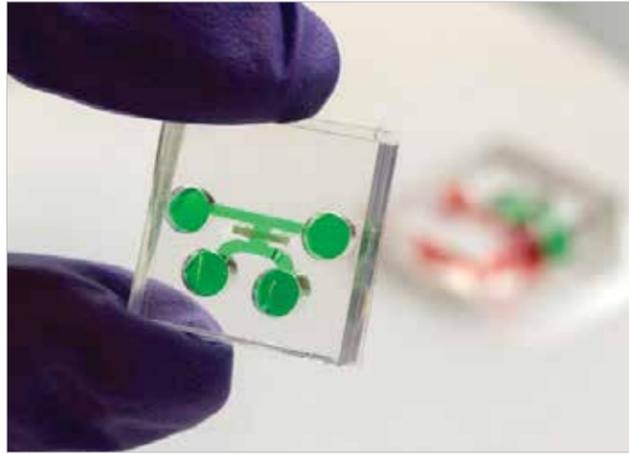
Great Health Starts Here[®]



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Welcome to Aspect, Nevada Dental Benefits, Ltd.'s quarterly news bulletin, through which we offer contemporary news information on oral health, the dental industry, the latest research and advice for providers.

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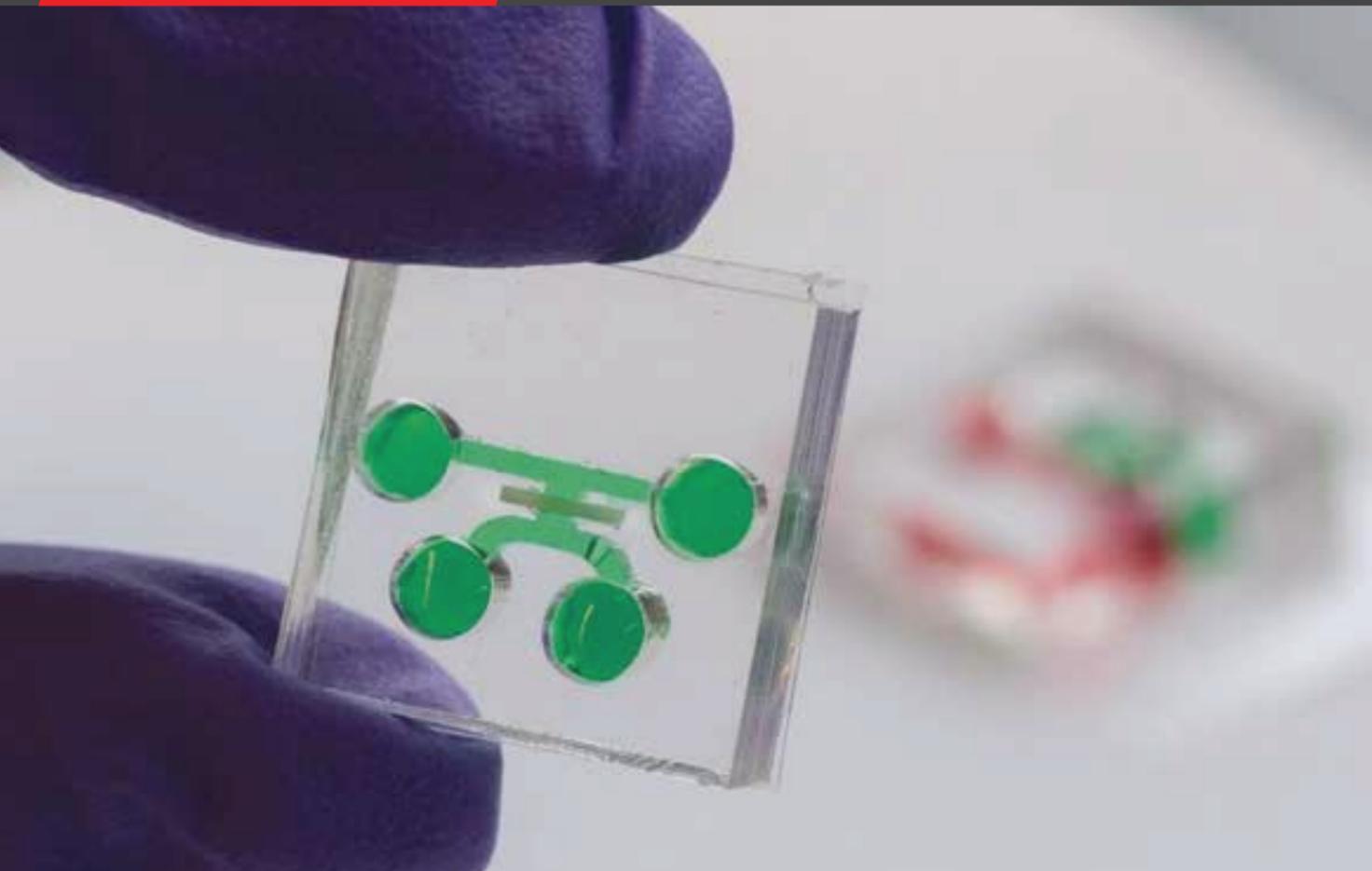
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The "tooth-on-a-chip" is allowing researchers from Dr. Luiz Bertassoni's OHSU lab to observe how teeth interact with reconstruction materials and bacteria. (OHSU/Kristyna Wentz-Graff)

NEW 'TOOTH-ON-A-CHIP' COULD LEAD TO MORE PERSONALIZED DENTISTRY

Franny White | OHSU.edu

Miniature dental device gives up-close, real-time view into how teeth respond to dental materials

A so-called "tooth-on-a-chip" could one day enable more personalized dentistry, giving dentists the ability to identify dental filling materials that work better and last longer based on a patient's own teeth and oral microbiome.

The miniaturized tooth system is a thin slice of a human molar placed between transparent rubber slides

that are etched with tiny channels through which fluids flow. The research device mimics a real tooth with a cavity, which allows fluids and bacteria to move between the cavity opening and the inner tooth. Scientists use a microscope to observe the tooth as it interacts with materials and bacteria.

While other mini-organs such as livers and lungs have been placed on chips like this for research purposes, this is the first time an organ-on-a-chip system has been created for dental research, reports a paper published in the Royal Society of Chemistry journal *Lab on a Chip*.

"Today's cavity fillings don't work as well as they should. They last for five, seven years on average, and then they break off," said the paper's corresponding author, **Luiz E. Bertassoni, D.D.S., Ph.D.**, associate professor of restorative dentistry in the OHSU School of Dentistry and biomedical engineering in the OHSU School of Medicine.

"They don't work because we haven't been able to figure out what's happening at the interface of the tooth and the filling," Bertassoni continued. "This device can help address that by giving us a close-up view of what's happening there in real-time. Years from now, dentists could extract a tooth from a patient, load it into this device, observe how a dental filling material interacts with the tooth, and pick a material that's best for that particular patient."

The device is designed to help scientists better understand the inner workings of dental cells in their natural environment. For example, researchers could use the tooth-on-a-chip to better understand how teeth form and how they respond biologically to all sorts of injuries and treatments.

"It opens up a new window into the complexity of dental care that could change the way we do dentistry quite significantly," Bertassoni said.

This research was supported by the National Institute of Dental and Craniofacial Research (grants R01DE026170 and 3R01DE026170-03S), the Oregon Clinical & Translational Research Institute's Biomedical Innovation Program, International Association for Dental Research Innovation in Oral Care Awards with funding provided by GlaxoSmithKline, Michigan-Pittsburgh-Wyss Resource Consortium's Regenerative Medicine Resource Center, and the OHSU Fellowship for Diversity and Inclusion in Research.

REFERENCE: *Cristiane Franca, Anthony Tahayeri, Nara Rodrigues, Shirin Ferdosian, Regina Puppini Rontani, Grigoriy Sereda, Jack Ferracane, Luiz Bertassoni, "The tooth on-a-chip: a microphysiologic model system mimicking the biologic interface of the tooth with biomaterials," Lab on a Chip, Dec. 19, 2019, <https://doi.org/10.1039/C9LC00915>*

To view the original article, [click here](#).



NEW HPV SALIVA TEST MAY SPEED DETECTION OF MOUTH, THROAT CANCERS

Joseph Constance | DrBicuspid.com

Scientists have fused acoustics and microfluidics in a novel saliva test designed to show within minutes whether a person has a high-risk strain of HPV associated with mouth and throat cancers. Results were published online December 13 in the *Journal of Molecular Diagnostics*.

Investigators at Duke University, the University of California, Los Angeles (UCLA), and other institutions developed an acoustofluidic noninvasive technique that analyzes saliva for the presence of HPV type 16, the pathogenic strain that causes oropharyngeal cancers (OPCs). Their acoustofluidic platform detected OPC in the saliva of 80% of patients with cancer confirmed by tissue biopsies, reported co-lead investigator Tony Jun Huang, PhD, a professor of mechanical engineering and mechanical science at Duke, and colleagues.

OPC rises with HPV

This type of novel rapid-detection method has potential to enable early detection and improve health outcomes. Currently, diagnosis involves clinical examinations - visual and palpation - that are unable to pick up premalignant lesions in oral cavities. The incidence of OPC has been rising fast along with HPV, and there are approximately 115,000 new cases reported worldwide every year, the authors noted. The five-year survival rate is less than 50%, underscoring the need for better screening and detection methods.

For the study, the researchers analyzed saliva samples from 10 patients diagnosed with HPV-OPC using traditional methods. They found that their technology combined with Droplet Digital polymerase chain reaction (ddPCR, Bio-Rad) identified HPV16 DNA in 80% of confirmed OPC cases. Reverse transcription PCR analysis showed that the average yield of salivary exosomal small RNA from the acoustofluidic platform is 15 times greater than with the current gold standard: differential centrifugation. Essentially, the acoustofluidic platform can achieve high-purity, high-yield salivary exosome isolation for downstream salivary exosome-based liquid biopsy applications.

And because isolation is derived using low power intensity surface acoustic waves, it's gentler than long-term exposure to a high centrifugal force. So, the platform can isolate structurally intact and biologically active exosomes.

Moreover, the genomic and proteomic profiling efficiency of liquid biopsy is significantly optimized by the high purity and yield properties of acoustofluidics, which make it possible to examine rare exosomal microRNAs and protein signatures in the saliva of patients who have OPC.

Isolating salivary exosomes

Exosomes are tiny microvesicles originating within cells secreted into body fluids. Their numbers are elevated with the onset of different types of cancers. In acoustofluidics, fluid samples are analyzed by a small acoustofluidic chip that isolates salivary exosomes by removing unwanted particles based on size, leaving exosome-rich concentrated samples that make it easier to detect tumor-specific biomarkers.

The researchers optimized their acoustofluidic platform for isolating exosomes in saliva samples that had different physical qualities, including different viscosities. Because the scientists' high-yield exosome isolation approach can tolerate variability among samples caused by changes in saliva viscosity and collection methods used, it may be useful in clinical settings.

"These data showed that this platform is capable of consistently isolating exosomes..."

To view the online article, [click here](#).

Bucky's Bites

Spring cleaning may sound easy, but where do you start? Here are a few ideas to instantly declutter your space.

REMOVE:

- ▶ DVDs you never watch
- ▶ Socks without a match
- ▶ Take-out ketchup & soy packets
- ▶ Food-storage containers w/o a lid
- ▶ Dried out markers, pens, etc.
- ▶ Clothing that is too big or too small
- ▶ Chipped plates, mugs, cups
- ▶ Expired coupons
- ▶ Old receipts
- ▶ Baking supplies you'll never use
- ▶ Books you'll never read again
- ▶ Magazines

For the full list of 30, visit www.declutteringyourlife.com





COMPLIANCE

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IMPORTANT INFORMATION REGARDING THE DISPOSAL AND RECYCLING OF AMALGAM WASTE

As the EPA deadline for installing and recycling an amalgam separator is only six months away, we asked Dr. Jack Dillenberg, a leading expert on public health compliance issues, to update our providers on a key aspect of the rule; namely the proper disposal of the wastes.

Dr. Jack Dillenberg has been a Public Health Dentist for over forty years and has served as the Director of the Arizona Department of Health Services in the Governor's cabinet for four years. Dr. Dillenberg was selected as the Inaugural Dean of the Arizona School of Dentistry & Oral Health (ATSU), Arizona's first dental school, for fifteen years and is now Dean Emeritus.

Q: Dr. Dillenberg, how do I ensure that the amalgam waste I generate is properly recycled?

A: Recycling at an EPA verified facility would be the best way to ensure that your amalgam waste is being properly recycled. As the dentist, you are liable for the proper recycling of the waste, so I would strongly recommend researching the facility that the waste will be going to when choosing a company to recycle with. Simply handing off the waste to a dental supplier or recycling company could still leave you liable if that waste is not disposed of or recycled properly.

Q: Can my amalgam waste be recycled overseas?

A: You can ship your amalgam waste overseas; however, the rules for shipping hazardous waste are quite onerous (see 40 CFR 262.83). In addition, you would still be liable for how the waste is recycled and if there is an accident in transit.

Q: Finally, Dr. Dillenberg, from your many years of experience in the compliance field, what is the key fact you want to stress upon our providers?

A: As generators of hazardous waste, providers are

ultimately responsible for how the waste is recycled. Whether you work for a private practice, public sector clinic, DSO, dental school, etc., you can still be held liable for how the waste is disposed and recycled as seen through many other legal precedents.

Q: What do our providers need to provide the local Nevada environmental officials or Publicly Owned Treatment Works (POTW) with to show compliance?

A: 90 days from the July 14th deadline, all offices in the US must submit a compliance report. In addition, inspectors could visit the office and ask for documentation showing the waste has been properly recycled by a certified EPA facility. If you are shipping and recycling overseas, this could complicate your inspections due to the amount of time it would take to receive the certificate of recycling. Furthermore, your local environmental officials or POTW might not find an international recycling certificate acceptable, assuming they provide you with one.

Please meet Dr. Vinne Chen, co-founder of Significance Dental Specialists. Originally from Taiwan, Dr. Chen moved to California with her family when we was 16. After completing dental school at Columbia University and Endodontic Program at University of Pennsylvania in 2006, Dr. Chen moved to Las Vegas, and it's been her home ever since.

NDB: What inspired you to become a dentist?

VC: I was involved in a Charity group, Tze-Chi Foundation, for medical outreach projects when I was in college. I worked as dental assistant, along with several dentists who not only had great skills, but also big hearts full of compassion. They inspired me and motivated me to become a dentist.

NDB: Why did you choose Las Vegas?

VC: I moved to Vegas to set up the multi-specialty office: Significance Dental Specialists. The invitation was from my sister, Victoria Chen (the orthodontist) and Brother-in-law, Allen Huang (the periodontist). It was all because of family.

NDB: What do you think you'd be doing if you weren't a dentist?

VC: I probably would listen to my parents and become a medical doctor like my twin sister.

When you're not at work, what are some of your favorite things to do?

VC: The best moment will be spending time with kids and do whatever together. I also love tennis, working out, skiing and snowboarding, and traveling around the world. I definitely enjoy wine with friends.

Do you have a personal or professional motto?

VC: Follow your heart and try your best! I always told my kids that you never know the result until you try. Life is full of possibilities, and chances are for the people who work for it.



If you know of a dentist that might like to be featured in one of our upcoming news bulletins, please let us know. Email Crystal Robbins at crobbs@nevadadentalbenefits.com

Dr. Chen & family in El Calafate, Argentina





ADA ANNOUNCED INTERIM POLICY ON VAPING

Jennifer Garvin | ADA News

Association calls for total ban on vaping products not FDA - approved

Dentists “must be prudent” in protecting patients from harmful products.

That was the overall message American Dental Association President Chad P. Gehani imparted following the Dec. 16 announcement that the Association has adopted a new interim policy on vaping. The interim policy calls for a total ban on all vaping products that aren’t approved by the Food and Drug Administration for tobacco cessation purposes.

The policy, which is in step with the American Medical Association’s new policies on vaping, states that the ADA will:

- ▶ Urgently advocate for regulatory, legislative, and/or legal action at the federal and/or state levels to ban the sale and distribution of all e-cigarette and vaping products, with the exception of those approved by the FDA for tobacco cessation purposes and made available by prescription only; and
- ▶ Advocate for research funding to study the safety and effectiveness of e-cigarettes and vaping products for tobacco cessation purposes and their effects on the oral cavity.

“While the long-term oral health effects of vaping are under scientific review, as health professionals we must be prudent in protecting consumers from potentially harmful products,” said Dr. Gehani in an ADA statement. “We will continue to advocate for additional research, but we must protect the health of our patients first and foremost. A ban such as this would ensure patient safety while allowing us to explore the impact of vaping products on oral health.”

The ADA has long advocated for the development of a body of scientific research examining the oral effects of both tobacco and non-tobacco nicotine delivery products as part of the ADA policy on tobacco use.

In addition to this interim policy, in September, the ADA House of Delegates passed a resolution stipulating that the word “vaping” and any other alternative nicotine delivery systems be added to the existing ADA policy focused on tobacco use prevention, research and regulation. The interim policy expands upon the Association’s 2016 tobacco policy, which calls for vaping devices to be regulated in the same manner as tobacco products.

Besides the AMA, several other organizations have created resources related to helping health care providers and patients learn more about vaping, including the American Academy of Pediatrics and the American Lung Association. The Centers for Disease Control and Prevention also has resources on lung injury and electronic cigarettes and vaping. The ADA encourages dentists and other health care providers to report potential vaping-associated respiratory illness by using the Food and Drug Administration’s safety reporting portal.

For more information about the ADA’s advocacy efforts around vaping and tobacco products, visit [ADA.org/vaping](https://ada.org/vaping).

To view the online article, [click here](#).



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 www.nevadadentalbenefits.com  (866) 998-3944  contactus@nevadadentalbenefits.com



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