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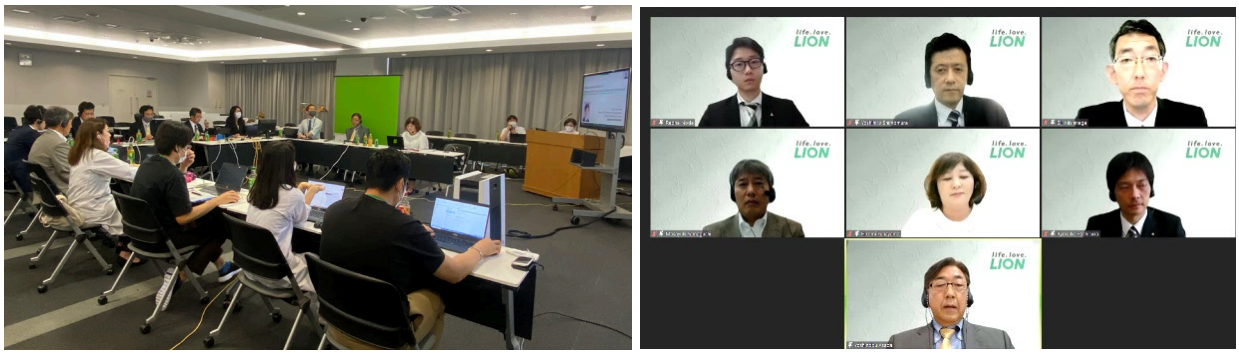
LION

Jul. 13, 2022

Lion's Toothbrush Research and Technology Showcased Internationally! Hosted an Industry-Sponsored Symposium titled Science Behind Toothbrushes in IADR, the World's Largest Dental Society

Lion Corporation hosted an Industry-Sponsored symposium, "Science Behind Toothbrushes," at the 100th General Session & Exhibition of the International Association for Dental Research (IADR) with more than 10,000 members, which is the world's largest dental society. The symposium on toothbrushes included research results on thin-head and slender-neck toothbrushes, sound generation toothbrush and oral care for children. In this meeting, nine research reports were also presented (including one from an overseas affiliate), and the Company presented the Lion Academic Awards,*1 which was established in 2001. The IADR meeting was held online from Monday, June 20 through Saturday, June 25, 2022.

*1 Lion Corporation established this award to support to academic researchers in the field of preventive dentistry.



Photos from an Industry-Sponsored symposium

Event Outline

The prevalence of oral diseases is still high, with approximately 2.3 billion people worldwide have untreated permanent dental caries, and 800 million people have periodontal disease*2. These dental conditions are largely influenced by living habits, but they are also known to be preventable with tooth brushing habits*3. With this, Lion held this Industry-Sponsored symposium to introduce the results of its many years of researches focused on toothbrushes for all life stages. Academic experts who have collaborated in the researches were invited to share their knowledge and discuss the results from an academic perspective.

At the event, we presented nine research studies aimed at improving oral healthcare (including one from an overseas affiliate), covering a wide range of areas, including basic research in the oral health care and product-based researches.

In addition, the Lion Academic Award was presented to Ms. Yue Chen (Nanjing Medical University, Jiangsu, China) and Mr. Tan Minh Nguyen (Deakin University, Victoria, Australia) in recognition of their outstanding research achievements in the fields of periodontal disease and oral health.

*2 E. Bernabe, W. Marcenes, C.R. Hernandez, et al. Global, Regional, and National Levels and Trends in Burden of Oral Conditions from 1990 to 2017: A Systematic Analysis for the Global Burden of Disease 2017 Study. J Dent Res, 99(4):362–373,2020.
*3 World Health Organization HP 「World Health Assembly Resolution paves the way for better oral health care」 https://www.who.int/news/item/27-05-2021-world-health-assembly-resolution-paves-the-way-for-better-oral-health-care

1. Industry-Sponsored Symposium

・Title：Science Behind Toothbrushes

・Program (listed in the order of the event schedule)

Subject	Summary	Presenter
Plaque removal efficacy of remarkably thin-head and slender neck toothbrush	Clinical test verified the plaque removal efficacy from the back molars of thin-head and slender-neck toothbrush (*CLINICA Advantage* toothbrush). The results showed that the toothbrush has a significantly higher plaque removal efficacy of lingual and buccal surfaces compared to general toothbrush.	Dr. Ryosuke Hachisuka Lion Corporation
The analysis method using an electro-magnetic tracking device for the assessment of accessibility to the last molar with remarkably thin-head and slender-neck toothbrush	Thin-head and slender-neck toothbrush (*CLINICA Advantage* toothbrush) was verified to reach the last molars using magnetic sensors. The toothbrush had significantly higher accessibility on the lingual and buccal surfaces compared to general toothbrush.	Dr. Yoshihiro Shimomura Design Research Institute Chiba University
Brushing load control efficacy of sound generation toothbrush	Verified the effectiveness of brushing load control of the brush (*CLINICA Next Stage* toothbrush) that generates an audible sound when an excessive load is applied. It was proven that the brushing load could be controlled to approximately 200g.	Mr. Reona Noda Lion Corporation
Mechanism of toothbrush-sound-generation system due to snap-through buckling	Verified the mechanism by which plastic parts generate an audible sound when applied to excessive brushing load. Proved that the sound is generated by the snap-through buckling of a hinge structure made of a material with a high elastic modulus.	Dr. Masayuki Yamaguchi School of Materials Science, Japan Advanced Institute of Science and Technology
Plaque removal efficacy of kid's toothbrush mainly composed of soft materials aimed to reduce oral trauma	Clinical test verified the plaque removal efficacy of *CLINICA Kid's Toothbrushes* for 3-5 year olds, which are made of soft materials. The results proved that the plaque removal efficacy of the toothbrush was same level as that of the general toothbrush.	Dr. Yoshinobu Asada Department of Pediatric Dentistry, Tsurumi University School of Dental Medicine
Effectiveness of a new oral care device in improving children's oral health habits	Clinical test verified the effectiveness of *CLINICA Kid's Hamigaki no Okeiko*, an IoT toothbrush for children, in improving oral care habits. The study demonstrated	Dr. Hiromi Funayama Department of Pediatric Dentistry, Tsurumi University School of Medicine

	that the toothbrush improved children's tooth-brushing skills and positive attitudes toward tooth-brushing.	

2. Research Reports (Listed in Order of Registration)

Subject	Presenter
Virucidal activity of oral care products against enveloped viruses	R Komatsu, N Suzuki, N Kawaguchi, A Naito Lion Corporation
Inhibitory Effects of Toothpaste Ingredients on SARS-CoV-2 Infection in vitro	T Iwamoto[1] , R Tateyama-Makino[1] , K Tsutsumi1 , M Abe-Yutori[1] , M Tsuji[2] , S Morishita[1] , K Kurita[1] , E Nishinaga[1] , Y Yamamoto[1] , K Tsukinoki[3] 1.Lion Corporation 2.Institute of Molecular Function 3.Division of Environmental Pathology, Department of Oral Science, Kanagawa Dental University
Whitening efficacy and safety of hydrogen peroxide whitening strips	Fengbao An , Debao Li , G Iiizumi , Y Fukuda Lion Daily Necessities Chemicals (Qingdao) Co., LTD,
Comparison of Healthy Versus before/after Dental Treatment Oral Microbiome	T Inokuchi , Y Aita , K Yama , N Fujii , Y Maruyama , M Sako , K Tsutsumi , M Kimura , Y Ichiba , Y Kakizawa Lion Corporation
Comparison of Healthy Versus before/after-Dental Treatment Oral Metabolome Profiles	N Fujii , Y Maruyama , M Sako , K Yama , Y Aita , T Inokuchi , K Tsutsumi , M Kimura , Y Ichiba , Y Kakizawa Lion Corporation
Plaque removal efficacy of kids' toothbrush with easily bent neck	S Hayashida[1] , N Kanamaru[1] , Y Asada[2] , H Funayama[3] 1.Lion Corporation 2.Tsurumi University School of Dental Medicine 3. Department of Pediatric Dentistry Tsurumi University School of Medicine
Usefulness of Porcine Gingiva for Penetration Tests of Hydrophobic Ingredients	A Ohkuni , M Takahashi , K Kurita , K Yamamoto Lion Corporation
Effectiveness of the new oral care device for children	T Kanasugi[1] , M Satake[1] , N Kanamaru[1] , Y Asada[2] , H Funayama[3] , Y Shimomura[4] 1.Lion Corporation 2.Tsurumi University School of Dental Medicine 3. Department of Pediatric Dentistry Tsurumi University School of Medicine 3.Design Research Institute, Chiba University
Age-related Deterioration of Human Dentin	C Akabane[1] , M Kimura[1] , Y Yamamoto[1] , R Weinkamer[2] , P Fratzl[2] , K Sawada[3] , Y Kashiwagi[3] , S Murakami[3] 1.Lion corporation 2.Max Planck Institute of Colloids and Interfaces 3.Osaka University

3. Lion Academic Awards

Field	Winner	Subject
Periodontal disease	Yue Chen Nanjing Medical University, Jiangsu, China	B cell-derived TGF-β1 Inhibits Osteoblast differentiation in Periodontitis
Oral health	Tan Minh Nguyen Deakin University, Victoria, Australia	Economic evaluations of oral health preventive interventions: A systematic review.

Lion Research and Development Headquarter will continue to promote international communication related to research and development as well as other activities to further develop and deepen research in oral science with the aim of improving the overall health and quality of life of people around the world through their oral health.