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**AAO Foundation Final Report Form
(a/o 11/20/2019)**

Date: November 20th, 2019

Type of Award: Center Award

Name(s) of Principal Investigator(s): Jeff Nickel

Co-Investigators: David Covell, Laura Iwasaki, Sylvia Frazier-Bowers, Saran Huja, Sunil Kapila

Title of Project: *Consortium for Orthodontic Advances in Science and Technology (COAST): Innovators' Workshops on "Bridging the Biology and Technology Gap in Orthodontics and Craniofacial Care"*,

Period of AAOF Support: July 1, 2018 to June 30, 2019

Amount of Funding: \$50,000

Summary/Abstract of Completed Project (250 word maximum)

Objectives: The COAST 2018 Workshops goals were: 1) foster collaborative interactions among clinicians, educators, and researchers, 2) to develop a position paper establishing standards for the profession on how to use personalized and precision orthodontics in clinical practice, 3) to develop technology transfer plan, and 4) to produce a peer-reviewed proceedings based the information derived from the workshops.

Methods: Participants of the Consortium for Orthodontic Advances in Science and Technology (COAST) 2018 Innovators' Workshop met at the Scottsdale Plaza Resort, September 12th -16th, 2018.

Results: The role of gene-environment interactions, to explain complex craniofacial traits, was the focus of several sessions. It was agreed that there was the need for diverse approaches such as (i) large-scale collaborative efforts for future genetic studies of complex traits such as malocclusion; (ii) deep genome sequencing to address the issues of isolated unilateral mutations;

(iii) quantifying epigenetic-environmental variables in diverse areas such as chronic myofascial pain, alveolar remodeling during tooth movement, and mandibular condylar growth. Also, there was the need for multi-scale/multi-species modeling and experimentation, with enhanced emphasis on controlled mechanics, for inter-species translation of results about bone biology. Finally, discussions amongst panelists facilitated a consensus that there was a need for a consortium approach to establish standards for intra-oral scanning and 3D imaging.

Conclusions: Current and emerging technologies still required supported research to translate new findings to the orthodontic clinic.



Response to the required questions are as follows:

1. Were the original, specific aims of the proposal realized?

Yes, the specific aims were met. Approximately 45 registered attendees heard presentations from approximately 35 speakers, and 4 lunch-hour focus groups. The Innovators' workshops were organized according to five themed sessions. Each session was concluded by a panel discussion. The aims of the discussion sessions were to identify: i) the strengths of evidence of discoveries, ii) the required steps to enable further development, iii) the steps required to implement new findings into orthodontic practice. Prefaces to the journal publications produced by the two workshops described outcomes for establishing standards for

the profession on how to use personalized and precision orthodontics in clinical practice, as well as a technology transfer plan.

2. Were the results published?
 - a.) If so, was AAOF support acknowledged?
 - b.) If not, are there plans to publish? If not, why not and will AAOF support be acknowledged?

Yes, a special issue of Orthodontics and Craniofacial Research published a collection of 38 manuscripts, which were submitted by presenters. AAOF is acknowledged in these special issues of the journal: Orthodontics and Craniofacial Research, 2019, Vol 22 (S1)

The Preface to the special issue (Iwasaki et al., 2019, Orthod Craniofac Res 22(S1), pp: 5-7) addressed specific aims 2 and 3 which were: Specific Aim 2, to develop a position paper establishing standards for the profession on how to use personalized and precision orthodontics in clinical practice; and Specific Aim 3, to develop technology transfer plan

3. Have the results of this proposal been presented?
 - a.) If so, when and where? Was AAOF support acknowledged?
 - b.) If not, are there plans to do so? If not, why not and will AAOF support be acknowledged?

Yes, the presentation site was the Scottsdale Plaza Resort. AAOF was acknowledged as a major contributor to the workshops

4. To what extent have you used, or how do you intend to use, AAOF funding to further your career?

A secondary goal of the Workshop' was to showcase the research work of young investigators who have been sponsored by the AAOF. It is the intention to submit to the AAOF proposals for future COAST workshops

Accounting for Project, i.e., any left-over funds, etc.

All funds spent from this award have been in accord to the approved budget and with the oversight of the OHSU School of Dentistry, Sponsored Programs Office.

Please return to AAOF via email attachment to aaofevp@aaortho.org