

# RESEARCH SPOTLIGHT

## TRANSLATING SCIENCE TO PRACTICE

### Discovery Across Disciplines

The Penn Dental Medicine research enterprise spans scientific disciplines to translate new knowledge into clinical therapies that are expanding our understanding of disease and advancing patient care. In 2019, faculty and research staff throughout the School continued to move research and scholarship forward across their respective fields and beyond. On the pages that follow, we highlight some of these research and scholarly activities for 2019.

### FY19 Patents Awards

The following patents were awarded to Penn Dental Medicine faculty in fiscal year 2019 as part of their research activities.

Compositions and Methods for Suppression of Inhibitor Formation against Coagulation Factors in Hemophilia Patients  
*Lead Investigator/Co-Inventor: Dr. Henry Daniell, Basic & Translational Sciences*

Antivirals against Molluscum Comtagiosum Virus  
*Lead Investigator/Co-Inventor: Dr. Robert Ricciardi, Basic & Translational Sciences*



### Funding by Investigators

Among the Penn Dental Medicine faculty, following are the total funds (direct and indirect) spent by each investigator in the 2019 calendar year.

FACULTY/DEPARTMENT	2019 TOTAL
Dr. Kelly Jordan-Sciutto, Basic & Translational Sciences	\$2,197,822
Dr. George Hajishengallis, Basic & Translational Sciences	\$1,804,530
Dr. Dana T. Graves, Periodontics	\$1,531,383
Dr. Henry Daniell, Basic & Translational Sciences	\$1,263,550
Dr. Hyun (Michel) Koo, Orthodontics/COH/Pediatrics	\$1,238,257
Dr. Shuying (Sherri) Yang, Basic & Translational Sciences	\$902,668
Dr. Gary H. Cohen, Basic & Translational Sciences	\$887,265
Dr. Patricia Corby, Oral Medicine	\$849,825
Dr. Claire H. Mitchell, Basic & Translational Sciences	\$669,098
Dr. Thomas Sollecito, Oral Medicine	\$585,894
Dr. Yan Yuan, Basic & Translational Sciences	\$565,705
Dr. Bruce J. Shenker, Basic & Translational Sciences	\$496,179
Dr. Hydar Ali, Basic & Translational Sciences	\$446,706
Dr. Geelsu Hwang, Preventive & Restorative Sciences	\$333,765
Dr. Kathleen Boesze-Battaglia, Basic & Translational Sciences	\$324,750
Dr. Flavia Teles, Basic & Translational Sciences	\$287,752
Dr. Joan Gluch, Community Oral Health (COH)	\$283,495
Dr. Robert P. Ricciardi, Basic & Translational Sciences	\$226,160
Dr. Chider Chen, Oral & Maxillofacial Surgery	\$206,830
Dr. Nataliya Balashova, Basic & Translational Sciences	\$170,658
Dr. Kang Ko, Periodontics	\$86,638
Dr. Anh Le, Oral & Maxillofacial Surgery	\$73,929
Dr. Joseph P. Fiorellini, Periodontics	\$33,986
Dr. Qunzhou Zhang, Oral & Maxillofacial Surgery	\$652

## Scholarly Impact

The impact of faculty publications measured by the h index\* is presented for a selection of faculty within both the clinical departments and the Department of Basic & Translational Sciences for the past five years. Career h-indexes are also included.

### CLINICAL DEPARTMENTS

FACULTY	SCOPUS H-INDEX	
	LIFETIME	5-YEAR
Dr. Hyun (Michel) Koo, Ortho/COH/Community	50	19
Dr. Dana Graves, Periodontics	66	15
Dr. Chider Chen, Oral Surgery	23	14
Dr. Geelsu Hwang, Preventive & Restorative Sciences	18	13
Dr. Bekir Karabucak, Endodontics	16	9
Dr. Betty Hajishengallis, Pediatrics	14	9
Dr. Patricia Corby, Oral Medicine	20	8
Dr. Mark Wolff, Preventive & Restorative Sciences	26	8
Dr. Markus Blatz, Preventive & Restorative Sciences	26	7
Dr. Anh Le, Oral Surgery	39	7
Dr. Thomas Sollecito, Oral Medicine	17	6
Dr. Elliot Hersh, Oral Surgery	27	5
Dr. Qunzhou Zhang, Oral Surgery	25	5
Dr. Jonathan Korostoff, Periodontics	21	5
Dr. Muralidhar Mupparapu, Oral Medicine	16	5
Dr. Rodrigo Neiva, Periodontics	24	5
Dr. Esra Sahingur, Periodontics	11	5
Dr. Frank Setzer, Endodontics	16	5
Dr. Joseph Fiorellini, Periodontics	33	4
Dr. Sunday Akintoye, Oral Medicine	22	4
Dr. Manju Benekanakere, Periodontics	17	4
Dr. Chun-His Chung, Orthodontics	16	4
Dr. Eric Stoopler, Oral Medicine	15	4
Dr. Rabie Shanti, Oral Surgery	13	4
Dr. Hellen Teixeira, Orthodontics	12	4
Dr. Hyeran (Helen) Jeon, Orthodontics	4	4
Dr. Syngcuk Kim, Endodontics	31	3
Dr. Francis Mante, Preventive & Restorative Sciences	17	3
Dr. Helen Giannakopoulos, Oral Surgery	8	3
Dr. Eric Granquist, Oral Surgery	5	3
Dr. Su-Min Lee, Endodontics	3	3

### CLINICAL DEPARTMENTS (CONTINUED)

FACULTY	SCOPUS H-INDEX	
	LIFETIME	5-YEAR
Dr. Evanthia Anadioti, Preventive & Restorative Sciences	3	2
Dr. Temitope Omolehinwa, Oral Medicine	2	2
Dr. Neeraj Panchal, Oral Surgery	2	2
Dr. Fusun Ozer, Preventive & Restorative Sciences	22	1
Dr. Peter Quinn, Oral Surgery	15	1
Dr. David Stanton, Oral Surgery	11	1
Dr. Alan Atlas, Endodontics/Preventive & Restorative Sciences	4	1
Dr. Joan Gluch, Community Oral Health	2	1
Dr. Brian Ford, Oral Surgery	1	1
Dr. Katherine France, Oral Medicine	1	1
Dr. Takako Tanaka, Oral Medicine	1	1
Dr. Steven Wang, Oral Surgery	1	1

### DEPARTMENT OF BASIC & TRANSLATIONAL SCIENCES

FACULTY	SCOPUS H-INDEX	
	LIFETIME	5-YEAR
Dr. George Hajishengallis	56	24
Dr. Henry Daniell	63	20
Dr. Claire Mitchell	34	12
Dr. Kathleen Boesze-Battaglia	27	10
Dr. Shuying (Sheri) Yang	19	10
Dr. Tetsuhiro Kajikawa	11	8
Dr. Gary Cohen	66	7
Dr. Kelly Jordan-Sciotto	24	7
Dr. Flavia Teles	18	7
Dr. Hydar Ali	36	6
Dr. Yan Yuan	29	5
Dr. Cagla Akay Espinoza	13	5
Dr. Faizan Alawi	15	4
Dr. Nataliya Balashova	15	4
Dr. Bruce Shenker	34	3
Dr. Robert Ricciardi	32	2
Dr. Joseph DiRienzo	24	1

\* The h-index was developed by J.E. Hirsch, Department of Physics, UCSD and attempts to measure the impact of an individual's publications. As an example, an h-index of 20 means there are 20 publications that have 20 citations or more each in journals covered by the Scopus database.

## 2019 High Impact Original Articles: Clinical Sciences

Within the School's clinical departments, following is a selection of original research articles with Penn Dental Medicine faculty as first or senior authors published in 2019 in journals with high impact factors.\*

AUTHORS	ARTICLES	JOURNAL	IMPACT FACTOR*	DEPARTMENT
<b>Hwang, G.</b> ; Paula, A.J.; Hunter, E.E.; Liu, Y.; Babeer, A.; Karabucak, B.; Stebe, K.; Kumar, V.; Steager, E.; <b>Koo, H.</b>	Catalytic antimicrobial robots for biofilm eradication	<i>Science Robotics</i>	19.4	Orthodontics/ COH/Pediatrics
<b>France, K.</b> ; Stoopler, E.T.; <b>Tanaka, T.I.</b>	Palatal Swelling in a Patient with Refractory Leukemia	<i>JAMA Dermatology</i>	8.0	Oral Medicine
<b>Ko, K.I.</b> ; Syverson, A.L.; Kralik, R.M.; Choi, J.; DerGarabedian, B.P.; Chen, C.; <b>Graves, D.T.</b>	Diabetes-Induced NF-kappaB Dysregulation in Skeletal Stem Cells Prevents Resolution of Inflammation	<i>Diabetes</i>	7.2	Periodontics
<b>Stoopler, E.T.</b> ; <b>Shanti, R.M.</b>	Dyskeratosis Congenita	<i>Mayo Clinic Proceedings</i>	7.1	Oral Medicine/ OMFS
<b>Zhang, C.</b> ; Feinberg, D.; Alharbi, M.; Ding, Z.; Lu, C.; O'Connor, J.P.; <b>Graves, D.T.</b>	Chondrocytes Promote Vascularization in Fracture Healing Through a FOXO1-Dependent Mechanism	<i>Journal of Bone and Mineral Research</i>	5.7	Periodontics

## 2019 High Impact Original Articles: Basic & Translational Sciences

Within the School's Department of Basic & Translational Sciences, following is a selection of original research articles with Penn Dental Medicine faculty as first or senior authors published in 2019 in journals with high impact factors.\*

AUTHORS	ARTICLES	JOURNAL	IMPACT FACTOR*
Kourtzelis, I.; Li, X.; Mitroulis, I.; Grosser, D.; Kajikawa, T.; Wang, B.; Grzybek, M.; von Renesse, J.; Czogalla, A.; Troullinaki, M.; Ferreira, A.; Doreth, C.; Ruppova, K.; Chen, L.S.; Hosur, K.; Lim, J.H.; Chung, K.J.; Grossklaus, S.; Tausche, A.K.; Joosten, L.A.B.; Moutsopoulos, N.M.; Wielockx, B.; Castrillo, A.; Korostoff, J.M.; Coskun, U.; <b>Hajishengallis, G.*</b> ; Chavakis, T.* (*co-senior authors).	DEL-1 promotes macrophage efferocytosis and clearance of inflammation	<i>Nature Immunology</i>	24.0
Roy, S.; Gupta, K.; Ganguly, A.; <b>Ali, H.</b>	$\beta$ -Arrestin2 expressed in mast cells regulates ciprofloxacin-induced pseudoallergy and IgE-mediated anaphylaxis	<i>Journal of Allergy and Clinical Immunology</i>	14.1
Wang, B.; Lim, J.-.; Kajikawa, T.; Li, X.; Vallance, B.A.; Moutsopoulos, N.M.; Chavakis, T.; <b>Hajishengallis, G.</b>	Macrophage $\beta$ 2-Integrins Regulate IL-22 by ILC3s and Protect from Lethal <i>Citrobacter rodentium</i> -Induced Colitis	<i>Cell Reports</i>	7.8
Ng, A.Y.H.; Li, Z.; Jones, M.M.; Yang, S.; Li, C.; Fu, C.; Tu, C.; Oursler, M.J.; Qu, J.; <b>Yang, S.</b>	Regulator of G protein signaling 12 enhances osteoclastogenesis by suppressing Nrf2-dependent antioxidant proteins to promote the generation of reactive oxygen species	<i>eLife</i>	7.6
<b>Daniell, H.</b> ; Rai, V.; Xiao, Y.	Cold chain and virus-free oral polio booster vaccine made in lettuce chloroplasts confers protection against all three poliovirus serotypes	<i>Plant Biotechnology Journal</i>	6.8

## 2019 High Impact Review Articles

Following is a selection of review articles with Penn Dental Medicine faculty as first or senior authors published in 2019 in journals with high impact factors.\*

AUTHORS	ARTICLES	JOURNAL	IMPACT FACTOR*	DEPARTMENT
Chavakis, T.; Mitroulis, I.; <b>Hajishengallis, G.</b>	Hematopoietic progenitor cells as integrative hubs for adaptation to and fine-tuning of inflammation	<i>Nature Immunology</i>	23.5	Basic & Translational Sciences
<b>Daniell, H.</b> ; Kulis, M.; Herzog, R.W.	Plant cell-made protein antigens for induction of Oral tolerance	<i>Biotechnology Advances</i>	12.8	Basic & Translational Sciences
<b>Hajishengallis, G.</b> ; Chavakis, T.	DEL-1-Regulated Immune Plasticity and Inflammatory Disorders	<i>Trends in Molecular Medicine</i>	11.0	Basic & Translational Sciences
<b>Graves, D.T.</b> ; Milovanova, T.N.	Mucosal Immunity and the FOXO1 Transcription Factors	<i>Frontiers in Immunology</i>	4.8	Periodontics
Nagendrababu, V.; Pulikkotil, S.J.; Suresh, A.; Veettil, S.K.; Bhatia, S.; <b>Setzer, F.C.</b>	Efficacy of local anesthetic solutions on the success of inferior alveolar nerve block in patients with irreversible pulpitis: a systematic review and network meta-analysis of randomized clinical trials	<i>International Endodontic Journal</i>	3.3	Endodontics

\*The Impact Factor identifies the frequency with which an average article from a journal is cited in a particular year. This number can be used to evaluate or compare a journal's relative importance to others in the same field. Journal impact factors are reported in Clarivate Analytics InCites™ Journal Citation Reports®. The JCR, 2017, was used for these figures.

## 2019 New Grant Awards

In 2019, the following new grants were awarded to Penn Dental Medicine faculty.

### ARMOR Trial

Principal Investigator: Dr. Patricia Corby, Associate Professor of Oral Medicine (NIH; Total Award [transfer grant to Penn Dental Medicine]; \$7,146,747, 5 years)

### Modeling CNS Dynamics in HIV Infection and Cannabinoids with Forebrain Organoids

Principal Investigator: Dr. Kelly Jordan-Sciutto, Professor, Dept. of Basic & Translational Sciences (NIH; Total Costs: \$3,487,412, 5 years MPI R01)

### Roles of Novel MRGPRX2/MrgprB2 Signaling in Mast cells on Host Defense and Inflammation

Principal Investigator: Dr. Hydar Ali, Professor, Dept. of Basic & Translational Sciences (NIH; Total Award \$2,029,270, 5 years)

### Oral Tolerance for Hemophilia

Principal Investigator: Dr. Henry Daniell, Professor, Dept. of Basic & Translational Sciences (Indiana University; Total Award \$1,156,921, 3 years)

### Ryan White Part A CARE Services — AACO

Principal Investigator: Dr. Thomas Sollecito, Professor of Oral Medicine (City of Philadelphia; Total Award \$944,742, 3 years)

### FAS Controls Exosome-Mediated miRNA Transfer in MSC-Based Therapy

Principal Investigator: Dr. Chider Chen, Assistant Professor, Dept. of Oral & Maxillofacial Surgery (NIH; Total Award \$732,171, 3 years for R00 Phase)

