



10-2018

## Insight - October 2018

Dugoni School of Dentistry

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### Recommended Citation

Dugoni School of Dentistry, "Insight - October 2018" (2018). *Insight*. 4.  
<https://scholarlycommons.pacific.edu/insight/4>

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# insight

Autumn 2018 Research and Scholarship

Welcome to the autumn issue of *Insight*, a quarterly newsletter celebrating the accomplishments of our community of researchers. We aim to spotlight insights from people at the Dugoni School working in areas including clinical or biomedical research, the scholarship of teaching and learning, improvement of the health care system, and professional partnerships that advance the field.

## CALLING ALL FACULTY: BECOME A STUDENT MENTOR FOR PIP!

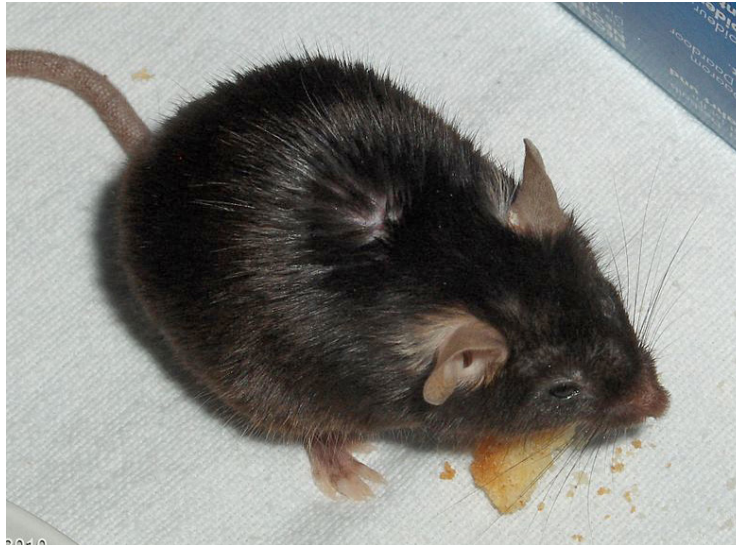
The Personalized Instruction Program, or PIP, is a strand of the school's Dental Helix Curriculum that gives students the opportunity to customize their learning. Guided by their own interest and curiosity, the student develops a unique pathway to experiences in a field or area related to healthcare that is not available in the core curriculum. The project can take a variety of forms — a literature review, an international dental mission, laboratory research, a clinic project, a teaching opportunity, educational resource, or a survey, just to mention a few examples. All students work with an expert in the field of interest; the student develops the idea and drives the project. Where do students find those expert faculty? At our school! Become a mentor and help a student forge a new learning path! For more information, email [thoover@pacific.edu](mailto:thoover@pacific.edu) or [ecuny@pacific.edu](mailto:ecuny@pacific.edu). Faculty can enroll in the Canvas site at [pacific.instructure.com/courses/7325](https://pacific.instructure.com/courses/7325).

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## RESEARCH IN THE SPOTLIGHT

### Mouse Model Demonstrates Strain Differences in Susceptibility to Opioid Side Effects

#### What is it?

Research on mice to determine if genetics influence the responses to and side effects from opioids — in particular, constipation and depressed breathing.

#### What problem does it aim to solve?

Opioids are an invaluable form of pain relief, but their side effects can be difficult to tolerate, and can even be life threatening. Determining what factors make it more likely that side effects will occur could help shape treatment recommendations for individuals as well as future drug development.

#### How does it work?

Researchers took 20 mice from two strains of mice from different genetic backgrounds, A/J and C57BL/6J, and randomly divided them into 4 groups. In the first experiment, the members of each group were injected with either 5 mg/kg (5 mg per kg of body weight) or 40 mg/kg of morphine, then monitored to see how their breathing slowed and their air intake decreased. In the second experiment, all the mice were injected three times a day with either saline or morphine at doses of 5, 15, 40 or 60 mg/kg and then given charcoal slurry to measure how the passage of material through the intestines slows down under the influence of opioids.

#### What are the real-world implications?

The A/J strain of mice responded differently than the C57BL/6J mice. In particular, the C57BL/6J demonstrated stronger responses to opioids; their breathing decreased and the passage of charcoal through their intestines slowed more than was the case for the A/J mice. Because all mice were raised and treated the same way, the differences are caused by genetics rather than environmental causes.

### What are the next steps?

More studies should be performed to determine what specific genes are responsible for the difference in side effects. This can help both to determine what opioids are best for a given individual and to develop new classes of opioids with fewer side effects.

### Source

"Mouse model demonstrates strain differences in susceptibility to opioid side effects", *Neuroscience Letters*, Volume 675, 14 May 2018, Pages 110-115  
[sciencedirect.com/science/article/pii/S0304394018301915](https://www.sciencedirect.com/science/article/pii/S0304394018301915)

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## NOTEWORTHY PUBLICATIONS

Research by Dugoni School faculty published in the last four months, retrieved from Scopus 10.22.18

**Du, P., Li, S.-J., Ojcius, D.M., Li, K.-X., Hu, W.-L., Lin, X., Sun, A.-H., Yan, J.**

A novel Fas-binding outer membrane protein and lipopolysaccharide of *Leptospira interrogans* induce macrophage apoptosis through the Fas/FasL-caspase-8/-3 pathway  
(2018) *Emerging Microbes and Infections*, 7 (1), art. no. 135.

[Abstract](#)

**Hartmann, R.C., Peters, O.A., de Figueiredo, J.A.P., Rossi-Fedele, G.**

Association of manual or engine-driven glide path preparation with canal centring and apical transportation: a systematic review

(2018) *International Endodontic Journal*, 51 (11), pp. 1239-1252.

[Abstract](#)

**Lai, H.-C., Chang, C.-J., Lin, C.-S., Wu, T.-R., Hsu, Y.-J., Wu, T.-S., Lu, J.-J., Martel, J., Ojcius, D.M., Ku, C.-L., Young, J.D., Lu, C.-C.**

NK cell-derived IFN- protects against nontuberculous mycobacterial lung infection

(2018) *Journal of Immunology*, 201 (5), pp. 1478-1490.

[Abstract](#)

**Hamid, H.R., Gluskin, A.H., Peters, O.A., Peters, C.I.**

Rotary Versus Reciprocation Root Canal Preparation: Initial Clinical Quality Assessment in a Novice Clinician Cohort

(2018) *Journal of Endodontics*, 44 (8), pp. 1257-1262.

[Abstract](#)

**Piskorz, J., Mlynarczyk, D.T., Szczolko, W., Konopka, K., Düzgüneş, N., Mielcarek, J.**

Liposomal formulations of magnesium sulfanyl tribenzoporphyrazines for the photodynamic therapy of cancer

(2018) *Journal of Inorganic Biochemistry*, 184, pp. 34-41.

[Abstract](#)

**Waldman, H.B., Perlman, S.P., Wong, A.**

I am a pediatric dentist: Why is major depression among adolescents my concern?

(2018) *Journal of Clinical Pediatric Dentistry*, 42 (4), pp. 247-249.

[Abstract](#)



**Contact *Insight*:** Have comments or suggestions on this or future issues of *Insight*? Contact Dr. David Ojcius, Assistant Dean for Research and Chair of the Department of Biomedical Sciences, to share your thoughts or to learn more about how to get involved in research at the Dugoni School. Email: [dojcius@pacific.edu](mailto:dojcius@pacific.edu)