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Mentor-Postdoc Spotlight March 2018

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Dr. Finkielstein's passion for science dates back to her early childhood, when at eight years of age, she ran her first experiment. She furthered her scientific ambitions by obtaining her PhD from the University of Buenos Aires, School of Natural Sciences (Buenos Aires, Argentina), under the mentorship of Dr. Ernesto Podesta. Her thesis was entitled 'Characterization of a phosphoprotein intermediary in the mechanism of action of peptide hormones'.

With her eyes set on pursuing an interdisciplinary research career, her post-doctoral trainings were in two different, yet-related, areas of research. First, from 1998 to 2001, she worked on *Cell cycle regulation and apoptosis in early Xenopus development* in different aspects of Cell, Molecular, and Developmental Biology, under the mentorship of Dr. James L. Maller, at the Howard Hughes Medical Institute, University of Colorado Comprehensive Cancer Center. Then, from 2001 to 2005, she worked on *X-ray structural determination of cellular DNA replicases* related to Structural Biology and X-ray crystallography, under the mentorship of Dr. Xiaojiang S. Chen, in the Department of Biochemistry and Molecular Genetics, at University of Colorado Denver Anschutz Medical Campus.

Current research in Dr. Finkielstein's laboratory focuses on understanding *time-of-day* sensing in cells and how cells respond to environmental perturbations to ensure timely progression of the cell cycle through adjustment of gene expression and biochemical processes. Because circadian disruption is predicted to play a pivotal role in initiation and progression of various diseases, her laboratory aims to unveil functionally relevant circadian-controlled signaling pathways and cross-talk mechanisms. The findings from this work will provide opportunities for the development of therapeutics against novel targets and for improvement of current treatment modalities.

Several findings associated with Dr. Finkielstein's research warrant being highlighted as they contribute to our unifying view of how circadian factors are integrators of diverse signaling cues. Among these, it is the finding that Period 2 (PER2), a core regulator of the circadian clock, directly interacts and controls the stability and transcriptional activity of the tumor suppressor p53, a molecule mutated in ~80% of all cancer cases. These results provide a framework from which one can explain the existence of basal levels of p53 under unstressed conditions, the time-of-day

distribution of this tumor suppressor, and the direct control over its activity in response to genotoxic stress.

With 55 high-impact publications to her credit, Dr. Finkielstein continues to conduct groundbreaking research in Circadian Rhythms and their impact on cancers. Because of its impact on the field, the publication listed below is considered to be the best contribution so far:

Gotoh T., Kim J., Vila-Caballer M., Liu J.J., Stauffer P.E., Tyson J., **Finkielstein C.V**. (2016) A model-driven experimental approach reveals the complex regulatory distribution of p53 by the circadian factor Period 2. ***Proc. Natl. Acad. Sci.*** 113(47):13516-13521. PMID: 27834218

Dr. Finkielstein's advise to current and future postdocs: "*Be patient, be bold, be inquisitive, trust your skills, pay attention to unexpected results and don't disregard them "as a potential technical errors." Have an open mind because your results could be "the exception to the rule." Develop good communication skills, write as much as you can, and be realistic (not all research gets published in high-profile journals). Learn from your mistakes, keep your focus, exchange ideas with colleagues, learn from other fields of science, and, above all, enjoy every minute of being a scientist. There is nothing more beautiful than the joy of knowledge*".

Featured Postdoc

Dr. Tetsuya Gotoh obtained his PhD from Tokyo Institute of Technology (Yokohama, Japan), under the mentorship of Dr. T. Kishimoto. His PhD thesis examined 'Regulation of checkpoint kinase Cds1 during Xenopus oocyte maturation and embryogenesis'. Dr. Gotoh joined Dr. Finkielstein's group in August 2010 where he pursues questions on the *cross talk between circadian rhythms and tumor suppressors*.

Please read "***Circadian-tumor suppressor crosstalk: Emerging opportunities in cancer chronotherapy***" published in the March 2018 issue.