Volume 2.15: April 22, 2019

Publications of the Week

Dynamics of Gene Expression in Single Root Cells of *A. thaliana*

First Author: Ken Jean-Baptiste *(pictured, left)* | Senior Author: Josh Cuperus *(right)*
Plant Cell | UW


Cuperus and Jean-Baptiste

Single-cell RNA-seq can yield high-resolution cell-type-specific expression signatures that reveal new cell types and the developmental trajectories of cell lineages. Applying this approach to *A. thaliana* root cells, the authors identified hundreds of genes with cell-type-specific expression, with pseudotime analysis of several cell lineages revealing both known and novel genes that are expressed along a developmental trajectory. **Profile | Abstract**

PIXUL-ChIP: Integrated High-Throughput Sample Preparation and Analytical Platform for Epigenetic Studies

First Author: Karol Bomsztyk *(pictured, left)* | Senior Author: Dr. Tom Matula *(right)*
Nucleic Acids Research | UW

The authors developed a novel technology (termed 'PIXUL') utilizing an array of ultrasound transducers for simultaneous shearing of samples in standard 96-well microplates. They integrated PIXUL with Matrix ChIP ('PIXUL-ChIP'), which allowed for fast, reproducible, low-cost and high-throughput sample preparation and ChIP analysis of 96 samples (cell culture or tissues) in one day. **Profile | Abstract**

Proximity-Dependent Proteomics of the *Chlamydia trachomatis* Inclusion Membrane Reveals Functional Interactions with Endoplasmic Reticulum Exit Sites

First Author: Mary Dickinson | Senior Author: Kevin Hybiske *(pictured)*
PLOS Pathogens | Center for Emerging and Reemerging Infectious Disease and UW

Kevin Hybiske

Within a host epithelial cell, chlamydiae replicate within a vacuole called the inclusion. Many *Chlamydia*–host interactions are thought to be mediated by the Inc family of type III secreted proteins that are anchored in the inclusion membrane, but their array of host targets are largely unknown. To investigate how the inclusion membrane proteome changes over the course of an infected cell, the authors adapted the APEX2 system of proximity-dependent biotinylation. **Abstract**

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Awards

$12M National Institutes of Health Grant to Study Rare, Aggressive Skin Cancer

Fred Hutch

A multidisciplinary team from UW and Fred Hutch has received a five-year, $12 million grant to study Merkel cell carcinoma (MCC), a deadly form of skin cancer. Dr. Paul Nghiem *(pictured)*, a skin cancer researcher at UW and Fred Hutch, is the Principal Investigator of the grant. The Seattle-based team has already collaborated on MCC research for more than a decade and made major contributions to the field. **Read More**

Major NIH Grant Funds a Closer Look at Understudied Sensory Hair Cells Crucial for Balance

Institute for Stem Cell & Regenerative Medicine

Dr. Olivia Bermingham-McDonogh has received a major R01 grant from the National Institutes of Health, a fifty-fold return on investment for UW, and a testament to the importance of seeding novel research. Her team studies the crista, sensory hair cells which help us maintain our gaze as we move through space, not unlike a stabilizer function in a modern camera. **Read More**

Athira Pharma CEO Leen Kawas Nominated for GeekWire Startup CEO of the Year

GeekWire

Leen Kawas

Managing a fast-growing startup is not easy. But the GeekWire Awards finalists for Startup CEO of the Year have figured how to not only lead early stage companies but also inspire others to join them on their mission. This year's nominees, including Athira Pharma CEO Leen Kawas *(pictured)*, run companies that operate in various industries, from virtual reality to fashion to biotech. **Read More**

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Local News

The Boy Missing an Entire Type of Brain Cell

The Atlantic

Dr. James Bennett, a pediatric geneticist at Seattle Children's, was tasked with figuring out why the structures in one boy's brain looked so unusual. The answer was ultimately stranger than doctors could have imagined: The boy's brain was missing an entire type of cell, called microglia, the result of mutations in a single gene, called CSF1R. Doctors had never seen anything like it. **Read More**

Synthetic Peptide Can Inhibit Toxicity, Aggregation of Protein in Alzheimer's Disease, Researchers Show

UW News

A team led by researchers at UW, including Dr. Valerie Daggett *(pictured)*, has developed synthetic peptides that target and inhibit small, toxic amyloid beta aggregates. Their synthetic peptides — which are designed to fold into a structure known as an alpha sheet — can block amyloid beta aggregation at the early and most toxic stage when oligomers form. **Read More**

Studying Cell Signaling in the Prostate

Institute for Stem Cell & Regenerative Medicine

Li Xin

New research led by Dr. Li Xin *(pictured)*, a Professor of Urology and a Faculty Member at the UW Institute for Stem Cell and Regenerative Medicine, sought to answer two key questions: What regulates the signaling that controls cell growth in the prostate? And why does the proliferation of cells seem to vary across different regions within the prostate? **Read More**

Epigenetic Therapies for Breast Cancer

The Scientist

Nancy Davidson *(pictured)* is the Senior Vice President and Director of the Clinical Research Division at Fred Hutch, and has been studying the molecular mechanisms that drive breast cancer for the past three decades. In this Q&A, she discusses what we've learned from the first wave of epigenetic trials for breast cancer, and what challenges lie ahead before such therapies reach the clinic. **Read More**

Inside Arzeda's Synthetic Biology Lab, Where Industrial Ingredients Are Brewed Like Beer

GeekWire

Alexandre Zanghellini's job as the CEO of Seattle-based synthetic biology company Arzeda is to reconsider how we make the basic molecules that go into anything and everything in the human world. His go-to metaphor to explain Arzeda's process is brewing beer. The company takes a bunch of cells (barley and hops) and puts them through a series of natural processes using enzymes (the malting, mashing and fermenting stage) to make something new (beer). **Read More**

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Upcoming Events in Seattle

April 23 6:30 PM	**Science in the City: Science of Sports and Entertainment – Acoustics at the New Arena** Pacific Science Center
April 24 6:00 PM	**The Science of Green Chemistry and Engineering** Fred Hutchinson Cancer Research Center, Pelton Auditorium
April 24 - 25 8:00 AM	**Life Science Innovation Northwest** Washington State Convention Center
May 2 8:00 AM	**Exploring Frontiers Seminar: Nature's Blueprint** Allen Institute
May 2 8:00 AM	**Intensive SBIR/STTR Workshop: NIH Focus** Agora Conference Center

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Science Jobs in Seattle

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