

Publications of the Week

Reprogramming Identifies Functionally Distinct Stages of Clonal Evolution in Myelodysplastic Syndromes

First Author: Jasper Hsu (pictured, second from left) | Senior Author: Sergei Doulatov (left) Blood | Fred Hutch, the Institute for Stem Cell & Regenerative Medicine and UW



The order of premalignant mutations and their impact on hematopoietic stem and progenitor cell self-renewal and differentiation remain poorly understood. The authors showed that episomal reprogramming of myelodysplastic syndrome patient samples generated induced pluripotent stem cells from single premalignant cells with a partial complement of mutations, directly informing the temporal order of mutations in the individual patient. [Profile](#) | [Abstract](#)

Human CD4⁺CD103⁺ Cutaneous Resident Memory T Cells Are Found in the Circulation of Healthy Individuals

First Author: Maria Klicznik | Senior Authors: Daniel Campbell (pictured, left) and Iris Gratz (right) Science Immunology | Benaroya Research Institute at Virginia Mason and the UW School of Medicine



The authors investigated the relationship between human skin CD4⁺ tissue-resident memory T cells (T_{RM}) and human blood CD4⁺ memory T cells expressing skin-homing markers. Analysis of immunodeficient mice bearing human skin xenografts revealed that human skin CD4⁺ T_{RM} can exit the skin, reenter the circulation, and home to secondary human skin sites. [Profile](#) | [Abstract](#)

Controlling Protein Assembly on Inorganic Crystals through Designed Protein Interfaces

First Author: Harry Pyles (pictured) | Senior Author: David Baker Nature | The Institute for Protein Design, UW, Pacific Northwest National Laboratory, and the Howard Hughes Medical Institute



The ability of proteins and other macromolecules to interact with inorganic surfaces is essential to biological function. The authors explored the possibility of systematically designing structured protein-mineral interfaces, guided by the example of ice-binding proteins, which present arrays of threonine residues (matched to the ice lattice) that order clathrate waters into an ice-like structure. [Profile](#) | [Abstract](#)

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Awards

Recipients for the CFAR 2019 New Investigator Awards

UW Center for AIDS Research



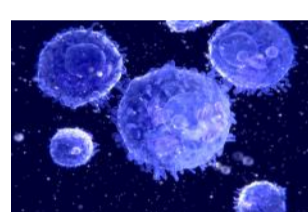
The UW/Fred Hutch Center for AIDS Research (CFAR) has announced six recipients of the 2019 New Investigator Awards, including Dr. Anthony Rongvaux (pictured). The award encourages junior investigators to conduct independent research, acquire preliminary data to use for exogenous grant submissions, publish, receive mentorship, and write one or more grants to obtain funding to continue their HIV/AIDS research careers. [Read More](#)

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Local News

Cancer Cells Reconnect with Their Inner Child to Evade Immunotherapy

Fred Hutch



Reconnecting with a gene from a long-forgotten youth may help adult tumor cells fly under the immune system's radar. A team of scientists at Fred Hutch found that a gene called DUX4 — usually turned on just after an egg is fertilized — allows tumor cells to become invisible to attacking immune cells. DUX4 may help to explain why checkpoint inhibitors do not work in all patients. [Read More](#)

Scientists Discover How the Mosquito Brain Integrates Diverse Sensory Cues to Locate a Host to Bite

UW News



For female mosquitoes, finding their next meal is all about smelling and seeing. Through behavioral experiments and real-time recording of the female mosquito brain, a team of scientists, led by researchers at UW, has discovered how the mosquito brain integrates signals from two of its sensory systems — visual and olfactory — to identify, track and hone in on a potential host for her next blood meal. [Read More](#)

E. coli Superbug Strains Can Persist in Healthy Women's Guts

UW Medicine



A recent study of over 1,000 healthy women with no symptoms of urinary tract infections showed nearly 9 percent carried multi-drug resistant E. coli strains in their guts. This is of clinical concern because disease-causing E. coli bacteria can transfer from the digestive tract to the female urinary tract via the urethra, the urine duct, which is shorter and positioned differently in females than in males. [Read More](#)

The Computational Protein Designers

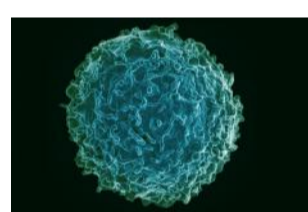
Nature



Natural proteins are difficult to modify without disrupting their overall structure. But by making proteins from scratch, researchers can design proteins to be more forgiving. According to Dr. David Baker (pictured) from UW, there's little that protein engineers cannot do, at least in terms of shape. But most proteins don't exist simply to assume a specific shape; it's function that matters. [Read More](#)

Machine Learning Toolkit Lets Biologists Navigate Their Way through a 3D Cell

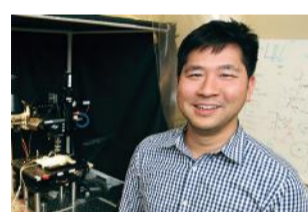
Allen Institute for Cell Science



To understand different components of the cell, you have to understand precisely where they are and what they look like. And that means knowing the exact location of those components' edges, down to the pixel. Enter the Allen Cell Structure Segmenter, a python-based, open-source toolkit incorporating machine learning techniques which helps scientists navigate complex images of cells by automatically capturing the boundaries of structures inside them. [Read More](#)

A Stroke of Genius

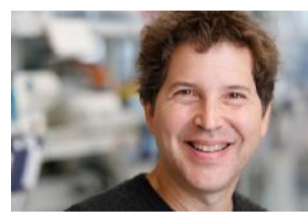
Seattle Children's Hospital



Dr. Andy Shih (pictured), Principal Investigator at Seattle Children's Research Institute's Center for Developmental Biology and Regenerative Medicine, hopes to solve the mystery of microinfarcts by modeling them in the lab and visualizing their effects in real-time. On the Pulse sat down with Shih to learn more about his work and how he's applying his discoveries from studying dementia in aging brains to understanding how blood vessels and clots first emerge in the brain. [Read More](#)

Protein Wrangler, Serial Entrepreneur, and Community Builder: Inside David Baker's Brain

Chemical & Engineering News



Dr. David Baker (pictured) is a group leader and head of UW's Institute for Protein Design, with a staff of just over 130. He is in the lab every day. While he admits that his group might not always appreciate such an active interest, it is part of what makes the Baker lab the Baker lab — along with daily social events and weekly chocolate tastings. He wants to foster a connectedness among not only his group members but also the protein design community. [Read More](#)

Two Irish Microbiologists Find Their Way, Together, to Seattle

Fred Hutch



When Dr. Susan Bullman (pictured, left) last year told her husband, Dr. Christopher Johnston (right), that she wanted to leave her job at Harvard's Dana-Farber Cancer Institute for a faculty post at Fred Hutch, he was, well, less than enthused. Yet, in April, each joined the Fred Hutch faculty, and since then, they have been staffing and stocking their own microbiology labs. [Read More](#)

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Upcoming Events in Seattle

July 31 7:00 PM	Why Do Humans Have Fewer Genes Than Corn? Foege Auditorium
August 6 5:30 PM	Women in Bio Annual Summer Social & Networking Mixer 1551 Eastlake Ave. E.
August 15 9:00 AM	Innovations in Imaging for Life Sciences Symposium UW NanoEngineering & Sciences Building
August 15 4:00 PM	Life Science Washington 2019 Summer Social Life Science Washington
August 21 7:00 PM	Medical Angels Seattle Public Library

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OncoResponse, Inc.
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NanoString Technologies
- Faculty Member, Pathogen Associated Malignancies Integrated Research Center**
Fred Hutch
- Scientist, Single Cell Transcriptomics**
Allen Institute for Brain Science

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