

### Publications of the Week

## A Chemically Controlled Cas9 Switch Enables Temporal Modulation of Diverse Effectors

First Author: Cindy Wei | Senior Author: Douglas Fowler (*pictured*)  
Nature Chemical Biology | UW



The authors describe a versatile, chemically controlled, and rapidly activated single-component DNA-binding Cas9 switch, cCas9, which they use to confer temporal control over seven Cas9 effectors, including two cytidine base editors, two adenine base editors, a dual base editor, a prime editor, and a transcriptional activator. Using these temporally controlled effectors, they analyze base editing kinetics, showing that editing occurs within hours and that rapid early editing of nucleotides predicts eventual editing magnitude. [Abstract](#)

## Improving the Secretion of Designed Protein Assemblies Through Negative Design of Cryptic Transmembrane Domains

First Author: Jing Yang Wang | Senior Author: Neil King (*pictured*)  
PNAS | UW



The authors show that designed hydrophobic interfaces that drive nanoparticle assembly are often predicted to form cryptic transmembrane domains, suggesting that interaction with the membrane insertion machinery could limit efficient secretion. They develop a general computational protocol, the Degreaser, to design away cryptic transmembrane domains without sacrificing protein stability. [Abstract](#)

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### Awards

## \$2 Million Award from National Science Foundation Will Support Team to Develop 3D-Printed Microorganisms for Sustainable Construction Materials

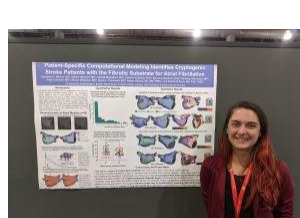
UW Molecular Engineering & Sciences Institute



An interdisciplinary research team led by UW Chemistry Professor Dr. Alshakim Nelson (*pictured*) received \$2 million in funding from the National Science Foundation's Emerging Frontiers in Research and Innovation program. The funding will be used to combine engineered microorganisms with 3D printing to create materials for sustainable built environments. [Read More](#)

## BioE Graduates Gain Hands-On Experience in Cardiovascular Science and Engineering

UW Department of Bioengineering (BioE)



Five UW graduate students were selected for the 2022/2023 Bioengineering Cardiovascular Training Program. Supported by a grant from the National Institutes of Health, this program provides funding for predoctoral students interested in cardiovascular science and engineering to train under the guidance of mentors. The five trainees, including Savannah Bifulco (*pictured*), will participate in a one or two-year program to enrich their research and support the future of cardiovascular-related research and technology development in the US. [Read More](#)

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### Local News

## Pfizer Buys Bothell-Based Seagen for \$43B

The Seattle Times



Pfizer is spending about \$43 billion to acquire Seagen, the Bothell-based biotech giant formerly known as Seattle Genetics. Pfizer plans to let the cancer treatment developer "continue innovating," except with more resources than it would have alone, Pfizer Chair and CEO Dr. Albert Bourla told analysts. Seagen, which employs about 1,800 people in the Seattle area and 1,500 elsewhere, specializes in working with antibody-drug conjugate technology. [Read More](#)

## Seattle's Life Science Market Continues to Normalize, Finishes 2022 Strong

The Registry



The life science industry continues to normalize after the past couple of years of increased growth. A recent report from CBRE shows that the fourth quarter of 2022 was a varied one for the Puget Sound region's life science market. The market maintained its strength with consistent employment growth and steady venture capital funding, and Seattle saw \$341 million allocated to the life sciences sector in the fourth quarter, making it the highest fourth quarter on record. [Read More](#)

## EMERALD: Automatically Locate Ligands in CryoEM Maps

Institute for Protein Design



Under ideal conditions, cryo-electron microscopy (cryoEM) can be used to determine protein structures at near-atomic resolution. But conditions are not always perfect. To help researchers make use of medium-resolution cryo-electron density maps, scientists led by Dr. Frank DiMaio (*pictured*) have developed EMERALD, a new software tool that can accurately and automatically produce deposition-ready small molecule models into cryoEM maps. [Read More](#)

## Faculty Spotlight: Tomas Mustelin

UW Medicine



Dr. Tomas Mustelin (*pictured*) came to the UW Division of Rheumatology in 2018 where he has continued his already extensive research career. His current research is focused on the molecular underpinnings of rheumatoid arthritis, systemic lupus erythematosus, ANCA-associated vasculitis, primary Sjögren's syndrome, and other autoimmune conditions. [Read More](#)

## Immunotherapy Helps Retired Fisheries Biologist Get Back to Normal

Fred Hutch



Chondrosarcoma is a cancer of the cartilage, the firm-yet-flexible connective tissue that makes up our noses and ears and protects and connects our bones, allowing our skeletons to move smoothly. Sharks, whose skeletons are made completely of cartilage, can suffer from chondrosarcomas, as can humans, including Mark Schuck (*pictured*), a retired fisheries biologist. [Read More](#)

## De Novo Design of Small Beta Barrel Proteins

Institute for Protein Design



The *de novo* design of small proteins with beta-barrel topologies has been a challenge for computational design due to the complexity inherent in these folds. In a new study appearing in *PNAS*, a team led by Dr. David Baker (*pictured*) and Dr. David Kim describes the successful design and characterization of four different classes of small beta barrels using Rosetta energy-based methods and deep learning approaches. [Read More](#)

## How This Dad Came to Lead a Seattle Biotech After Son's Rare Diagnosis

Puget Sound Business Journal



Myosana Therapeutics' Dr. Matthew Lumley (*pictured*) discovered the company not as a business leader, but as a parent. Dr. Lumley, who has held director roles at Pfizer and Moderna, has a six-year old son named Myles with Duchenne muscular dystrophy. He reached out to Myosana Therapeutics after his son was diagnosed. Now he's the company's CEO. [Read More](#)

## How Pfizer's \$43 Billion Acquisition of Seagen Could Impact the Biotech Industry in Seattle

GeekWire



Biopharma acquisitions often come with layoffs and lab shutdowns as smaller companies get absorbed. Whether that happens to Seagen is a big question that will impact the Seattle-area biotech community. In an investor call, Pfizer CEO Dr. Albert Bourla said that the New York City-based pharma giant intends to keep Seagen's operations in the Seattle area and San Francisco. [Read More](#)

## Biotech Giant Moderna Will Open Tech Office in Seattle, Plans to Hire up to 220 Workers

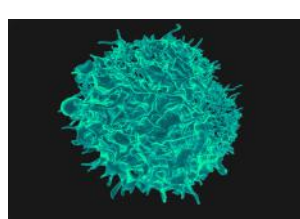
GeekWire



Cambridge, Massachusetts-based biotech company Moderna is opening an office in Seattle to build up its tech capacity, the company announced. The office will focus on artificial intelligence, cloud-based tools, and other technology applications. The company hopes to tap into Seattle's tech talent pool, with plans to hire up to 220 workers at the new office, which opens April 4. [Read More](#)

## How Immune Cells 'See' and Respond to Mutations in Cancer Cells

Institute for Systems Biology



In a just-published paper in the journal *Nature*, a collaborative team of researchers from the Institute for Systems Biology, the University of California, Los Angeles, PACT Pharma, and beyond analyzed T-cell responses in melanoma patients who were treated with different immune checkpoint inhibitors, and how those responses evolved over time. [Read More](#)

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### 📅 Upcoming Events in Seattle

March 21 6:30 pm	<b>The Power and Perils of Gene Editing</b> 400 Dexter Ave N.
March 22 8:00 am	<b>From the Laboratory to Leadership – Virtual 2023 Spring Program</b> Online
March 22 12:00 pm	<b>PNRI's Science Matters Seminar</b> Online
March 28 5:00 pm	<b>Deloitte PNW Life Science Industry Networking</b> Toppolf Renton
March 29 12:00 pm	<b>PNRI's Science Matters Seminar</b> Online

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### 📁 Science Jobs in Seattle

- Quality Assurance Associate I**  
Universal Cells-Astellas Pharma
- Scientist I, Bioreactor Process Design**  
Just-Evotec Biologics
- Laboratory Technician**  
Curi Bio
- Supervisor, Molecular Laboratory Operations**  
Adaptive Biotechnologies
- Director, Manufacturing**  
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