



A TOUR OF THE

INSTITUTE FOR SYSTEMS BIOLOGY

WATCH ISB'S VIDEO AT
bit.ly/STIS_isb

NONPROFIT BIOMEDICAL RESEARCH ORGANIZATION

Which key systems thinking skills are used within this organization?

#1: Explore Multiple Perspectives

ISB is a place where people with different upbringings, ages, ethnicities, genders, countries of origin, scientific fields, etc., all offer their own unique perspectives to conquer a wide variety of complex biological problems.

#4: Recognize Systems

ISB recognizes that understanding complex biological phenomena requires a systems approach. That approach requires the expertise of many different people.

#15: Respond to Changes Over Time

Working at the cutting edge of science requires continual advancement and improvement. Researchers are constantly updating the technology and techniques used at ISB.

1. What principles are the Institute for Systems Biology based on?

Genomics pioneer Dr. Lee Hood co-founded ISB in 2000 with the big picture in mind. His vision was to create the first-ever institute focused on systems biology. A systems biology approach looks at all parts of a biological system and how those parts work together to generate complex behavior. ISB's cross disciplinary team members work together to challenge the status quo and offer unique perspectives on human and environmental health.

2. How does ISB approach scientific research in a novel way?

The variety of perspectives present at ISB inform new experiments, the experiments lead to new ideas for pioneering technology, and that technology captures new data to form more experiments which is analyzed by new computational methods. This results in more experiments and allows us to study an entire system. We call this process - biology to technology to computation - the innovation engine.

3. How is the innovation engine integrated into the research at ISB?

Science often starts with a question. Collaboratively scientists come together to generate a hypothesis and then form an experiment to test it. Researchers may first ask questions and collect as much information as possible. In the tinkering lab, researchers then design new technology to collect valuable new data. At the computer, researchers use statistics and coding to create models and other visualizations to interpret this complex data. At the end of the experiment, they may realize they were asking the wrong thing, or come up with new questions in the process. This cycle drives the research at ISB.

4. How is systems thinking encouraged at ISB?

We encourage systems thinking and collaboration with open offices. We connect these offices with our labs and view every space as a chance to join forces. In fact, many ISB workers say that some of their best scientific ideas started out in informal conversations. Our scientists are not the only part of the ISB system. Our systems include the receptionist, maintenance crew, human resources, purchasing and more.

5. How does ISB share knowledge with the community?

At ISB, we develop curriculum that aligns with our research practices and provide internship opportunities for students and teachers. We work with entire school districts to help them use a systems approach for science learning and to ensure that quality STEM education is accessible to all students.

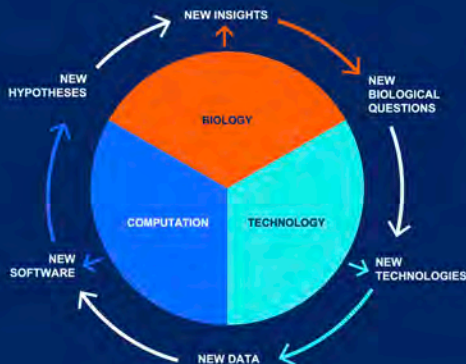


ISB

**SOUTH LAKE UNION,
SEATTLE**

HUMAN & ENVIRONMENTAL HEALTH

Every employee is an integral part of ISB. Every research project, fundraising event, shipping order, and educational seminar contributes to the mission of ISB. Research projects are diverse, ranging from COVID-19 to cancer to climate change.



THE INNOVATION ENGINE

The innovation engine shows how biology, technology and computation all play a role in addressing large systems problems in a holistic way. The process is not always a perfect circle, and sometimes the cycle must be repeated many times for a single project, but these key elements are what drive innovation at ISB.

OUR WORKSPACE

Giant metal sculptures, colorful walls, and natural plants throughout the building reflect the creativity present in ISB culture. Open workspaces and common areas foster collaboration. Walls made with whiteboard paint or glass can be written on for spontaneous conversations and the generation of new ideas.

