The **Knight Campus for Accelerating Scientific** Impact expands the university’s strengths in interdisciplinary scientific research and training, with a specific focus on facilitating innovation, and a goal to quickly turn discoveries into usable societal applications. Scholars and researchers in bioinformatics, genomics, biomedical artificial intelligence, neural engineering, molecular probes and sensors, and more are housed in the new campus. Researchers and students at the Knight Campus will tackle global challenges in a world-class space designed to support interactive interdisciplinary discovery. Over the coming decades, the campus will transform the region into a hub for innovation, with research that seeds start-up companies and talented graduates who attract existing industry to the area.

The Knight Campus was specifically designed to encourage a team-based, interactive approach to research and dramatically reduce the time it takes for discoveries to enter the market, where they can improve lives as new procedures, medical devices or treatments. It combines under one roof labs and classrooms with an innovation center and cutting edge core facilities that include the state’s first publicly owned class 1000 clean room, equipment for 3D printing, rapid x-ray imaging and rapid fabrication of prototypes.

Academics

Bioengineering: The Knight Campus and Oregon State University’s College of Engineering are combining strengths on a joint bioengineering doctorate program that fuels student success through access to faculty research, courses, and cutting-edge research facilities at both institutions.

The Knight Campus Graduate Internship Program is an integral part of the Phil and Penny Knight Campus for Accelerating Scientific Impact. As a nationally recognized program with a focus on industry-relevant technical and professional skills, it has distinguished itself for training students through hands-on training, including internship experiences with extensive partnerships in industry, government, and academia. The KCGIP is an innovative, accelerated master’s program that equips scholars with the skills that allow them to excel in their future careers: technical expertise, hands-on experience and professional skills (including communication, leadership, and teamwork). Students gain these skills through focused coursework and labs, professional development training, and a 9-month paid internship. Program tracks span the fields of engineering, physics, chemistry and biology and include:

* Bioinformatics and Genomics
* Molecular Sensors and Probes
* Polymer Science
* Semiconductor and Photovoltaic Device Processing
* Optical Materials and Devices

Students learn foundational knowledge and skills critical to their success in a particular field and actively apply what they learn to real-world problems in the lab. With feedback from internship partners, curricula are annually updated to meet the current demands of industry, national labs, and research settings. Students complete 6 to 7 graduate level graded courses (24 to 30 credits), dependent upon their track. Nearly half (47%) of the 79 recently enrolled students identify as female and 58% are underrepresented in STEM.

The Knight Campus Undergraduate Scholars Program is a pilot project designed to pair promising undergraduates with research mentors — graduate students, postdocs, and faculty members — in Knight Campus-affiliated labs. Business support services including access to tech transfer, regulatory affairs and business development professionals will be housed within the Campus. Competitive seed funding grants, workshops, networking events and more will be sponsored through this innovation hub.

In addition to providing a hands-on, world-class science experience, the Knight Campus also will provide students with professional development training in entrepreneurialism, communication and innovation. Also, the Knight Campus Internship Program trains scientists in an accelerated academic format and provides opportunities for real-world knowledge and skills necessary to be successful in the industrial environment.

Core Facilities: The Knight Campus is home to a rapid prototyping facility with leading-edge tools for rapid, high-precision fabrication of parts, devices and instruments at any scale between traditional machining and nanofabrication. Students, faculty and staff will have access to a five-axis mill accurate to 1 micron throughout its working volume, a five-axis waterjet cutter for all materials up to 2m x 3m x 300mm thick, novel tools for laser welding and cutting, a five-axis electrical discharge machining tool with sub-micron cutting accuracy, large format milling, CNC turning, and more.

The Knight Campus’ 3D printing facility provides printers and fabrication tools that make it possible to perform additive construction and manufacturing for nearly any material from biomaterials to plastics to metal. State-of-the-art additive manufacturing capabilities include metal and polymer 3D printing with a voxel size of 1 micron and smaller, a PCB printer capable of 80 circuit layers in a 3mm board thickness, a composites printer for fiber-reinforced industrial-grade components, and a metal LPBF/SLM printer for titanium, copper, nickel and others in a 27 Liter build space.

The Knight Campus features a Class 1,000 cleanroom to support the fabrication of next-generation micro-and nano-scale devices on traditional semiconductor substrates as well as soft materials. Additionally, users will be able to leverage the equipment and process capabilities to create integrated microsystems, bioengineering devices and broad work on broad areas of nanotechnology including nanoelectronics, nanophotonics, and nanobiotechnology. An environmental SEM capable of electron beam patterning is available within the facility.

The X-ray imaging facility provides versatile non-destructive X-ray based 2D and 3D imaging and quantitative analysis of biological samples and other materials at high resolution. This facility includes: a Zeiss Xradia 620 Versa (ex vivo microCT/X-ray microscopy specimen scanning of a wide range of sample dimensions and material types at voxel sizes ranging from sub-micron to hundreds of microns), a Scanco vivaCT80 (in vivo live animal longitudinal microCT imaging at voxel sizes in the tens to hundreds of microns), and a Faxitron Ultrafocus (in vivo live animal projection radiographs).

Research Centers

The Center for Translational Biomedical Research, a partnership between PeaceHealth and the University of Oregon’s Phil and Penny Knight Campus for Accelerating Scientific Impact, aims to forge biomedical research collaborations that produce increased research grant funding, journal publications and translation of new medical technologies.

The Wu Tsai Human Performance Alliance at Oregon is based in the Phil and Penny Knight Campus for Accelerating Scientific Impact. The University of Oregon is one of six institutions launching the alliance that promotes wellness and peak performance through scientific discovery and innovation.

UO/OHSU Joint Center for Biomedical Data Science (CBDS). Funded through two $10M lead gifts ($20M total), the University of Oregon and Oregon Health & Science University have joined forces to create a new joint center in biomedical data science, empowering researchers at both institutions to attack cancer with big data. The partnership combines efforts at the UO’s Phil and Penny Knight Campus for Accelerating Scientific Impact with those at the OHSU Knight Cancer Institute to detect and fight deadly forms of cancer and other common diseases. The center is facilitating applied, translation, and clinical research, developing innovative new approaches to quickly analyze large sets of data, allowing researchers to “listen in” on cell development for early detection of lethal diseases. The CBDS leverages UO’s strengths in biological sciences with OHSU’s efforts in precision medicine. Jointly, the center will initially involve as many as 20 researchers and their teams and bolster opportunities for students and researchers by increasing clinical research opportunities. UO is in the processing of hiring several additional faculty and is now recruiting top researchers. Additionally, the Presidential Initiative in Data Science collaborated on tenure-track faculty searches in Math and CIS for faculty to teach in the new data science undergraduate degree and to be research members of CBDS. CAS is currently in final negotiations with a world expert in the analysis of genomic data. The CBDS is poised to rapidly expand research and education activities in the areas of computational genomics and data science. A 3,000 sq ft cutting edge collaborative space is being designed as the home for the CBDS in the second building of the Knight Campus, bringing in close proximity computational and experimental scientists who will work together to tackle cancer genomic challenges.

Other Programs and Facilities:

The Knight Campus Entrepreneurship Speaker Series features life-science entrepreneurs who have started companies based on their research or engaged in other innovation activities.

Innovation Center: The first Knight Campus building houses a dynamic 6,000 square-foot innovation center. The center features leasable spaces, ranging from seats at shared lab spaces to private labs and offices, along with access to UO core research facilities, specialized equipment, and a community of entrepreneurs pursuing research-based startups.

Workshops and Classes: The Knight Campus sponsors a growing suite of workshops and courses to educate the next generation of life-science innovators. The Lens of the Market curriculum, in collaboration with ecosVC, leverages participants’ current research to explore commercialization processes. Short workshops tackle topics such as design thinking and intellectual property for life-science entrepreneurs. The campus is actively developing a set of formal courses in support of a planned graduate program in collaboration with UO’s Lundquist College of Business.

Seed Funding: Knight Campus primary faculty are eligible to apply for grants to assist with startup costs and to position their companies to be competitive for other funding sources.

**Compact paragraph**

Knight Campus for Accelerating Scientific Impact. The Knight Campus expands the university’s strengths in interdisciplinary scientific research and training, with a specific focus on facilitating innovation, and a goal to quickly turn discoveries into usable societal applications. In addition to providing research space, KCASI houses a dynamic innovation center with leasable lab and workspace. Scholars and researchers in bioinformatics, genomics, bioengineering, molecular probes and sensors, and more are housed in the new campus. Over a dozen new faculty hires have been made into KCASI in just four years, with a majority of them having a significant component of artificial intelligence, machine learning, or data science in their research. Researchers and students at the Knight Campus are tackling global challenges in a world-class space designed to support interactive interdisciplinary discovery. Over the coming decades, the campus will transform the region into a hub for innovation, with research that seeds start-up companies and talented graduates who attract existing industry to the area. The Campus is currently 160,000 square feet of wet lab and dry space in a beautiful new building that was completed in 2020. A second building is in the final planning stages with groundbreaking to occur at the end of 2022. At full functionality, the Knight Campus is projected to have 30 teams of scientists and researchers, accompanied by 550 students who will be involved in the research cycle.

In addition to a new PhD program in bioengineering, a core educational component of the Knight Campus is the Knight Campus Graduate Internship Program (KCGIP) that focuses on master’s education that is strongly based upon internship experiences and continually informed and updated by partner engagement. The Bioinformatics and Genomics Master’s Program (BGMP) is a cornerstone of the KCGIP and provides deep training in computational genomics and data science. A new track in data science is being developed. In addition, the Knight Campus Undergraduate Scholars Program is a pilot project designed to pair promising undergraduates with research mentors — graduate students, postdocs, and faculty members — in Knight Campus-affiliated labs. Business support services including access to tech transfer, regulatory affairs and business development professionals will be housed within the Campus. Competitive seed funding grants, workshops, networking events and more will be sponsored through this innovation hub. In addition to providing a hands-on, world-class science experience, the Knight Campus also provides students with professional development training in entrepreneurialism, communication and innovation.