

Chemical Biology for Health Institute

Mission statement

The mission of Chemical Biology for Health Institute (CBHI) at Oregon State University is to recruit, support, and integrate experts from chemistry, biology and the data sciences to nucleate multidisciplinary research specifically intended to protect and improve human health. The CBHI will achieve these goals by developing coordinated research thrusts and by providing centralized administrative and core technology facilities. The CBHI will increase opportunities and the competitiveness of current and future faculty and their trainees in areas that include drug discovery, green chemistry, exposure science and biomarkers and diagnostics. Finally, CBHI will play a pivotal role in increasing OSU's extramurally funded health research portfolio.

Timely opportunity for Oregon State University

Oregon State University has invested considerably in the recruitment of talented chemists, biologists, engineers, and the data scientists, but OSU does not have a college cross cutting organization to bring researchers together to tackle human health challenges that are caused by or can be ameliorated by understanding and exploiting biological and chemical interfaces. The CBHI will build upon a solid foundation of existing centers and core facilities including the Superfund Research Center (SRC), the Environmental Health Sciences Center (EHSC), and the Sinnhuber Aquatic Research Laboratory (SARL). These National of Institute of Health (NIH) funded programs will provide the nucleus for strategic CBHI growth by the recruitment of faculty and by creating or consolidating core facilities.

CBHI would provide an organizational framework to drive the evolution and development of interdisciplinary chemico-biological sciences at OSU over the next 5-10 years. Despite the fact that OSU now hosts extensive NIH-funded research, OSU is not nationally recognized for its biomedical research programs and expertise. However, OSU is recognized for its excellence in the chemical and environmental sciences. The CBHI would build upon those recognized strengths by synthesizing a new home for biomedical sciences at OSU predicated upon OSU's unique strengths at working at the interface of chemistry and biology. In order to sustain the existing programs and promote future growth in this area, OSU needs to commit to establishing a physical and organizational infrastructure for biomedical sciences, as a prerequisite to achieving the goal of becoming a Top 10 land grant university, and/or AAU member.

Vision for the Institute

Recruiting and retaining researchers and trainees requires an intellectually stimulating environment, state of the art facilities, and exceptional administrative support. The CBHI will start by leveraging the plethora of existing talent at OSU and will benefit greatly by outstanding existing administrative talent provided by the EHSC and the SRCs. Since this interdisciplinary institute will focus on human health research by studying chemical and biological interfaces, leadership (with Advisory Committee guidance) will recruit faculty working directly or indirectly in these areas. Recruitment into the CBHI will be strategic. Criteria for Institute membership will be guided by the following principles. Research fit, demonstrated interest or record of accomplishment in multidisciplinary research, a commitment to team science, and a willingness to contribute to program development to support the CBHI mission.

CBHI would also provide a leadership role in faculty development on the OSU campus, by providing formalized programs for career development of both early career investigators, as well as a training environment for mid-career or senior faculty in need of revitalization or change of

direction of their scholarly or research programs. Many components of such a professional development program already exist and are supported by the Center Grants that would be incorporated into CBHI. This would be especially helpful to support the development of new programs by providing a vehicle for existing OSU faculty to expand into emerging new areas of biomedical research.

The CBHI would first draw faculty from existing programs, and is not intended to replace existing departments. As the Institute matures, and as institutional budget pressures resolve, it will coordinate focused new faculty hires, most likely through joint appointments between existing departments, to support both Institutional programmatic goals as well as those of the home academic departments ('cluster hire strategy'). The CBHI would also provide a physical and programmatic home for existing NIH funded Centers at and Graduate and Postdoctoral Training Grants, which would facilitate synergistic new program development and the sustaining and renewal of these major Center grants.

The CBHI will recruit faculty members that fit into at least one of the following research thrusts.

- Drug Discovery
- Exposure Science
- Green Chemistry
- Biomarkers and Diagnostics
- Translational Data Integration

The CBHI will grow by identifying a diversity of revenue sources for deliberate investments into infrastructure, human resources, pilot projects, and other enabling support. We expect that CBHI will evolve to be a major nucleating structure for OSU human health related research; it will also create exciting opportunities for the recruitment and training of undergraduate and graduate trainees and postdocs working in participating colleges and departments across the campus. The initial administrative home will be centrally located in the Agriculture and Life Sciences Building Room 1011.

The Strategic Goals and Impacts within Oregon State University

1. Become a recognized model for inclusive and collaborative research
2. Lead research and innovation in basic and applied biology, chemistry and health analytics
3. Translate research discoveries to protect or improve human health
4. Foster new commercialization, business creation and economic activity

CBHI will not hold faculty lines and each faculty member has existing responsibilities to her or his home unit that must be carefully considered. The CBHI faculty membership list is intentionally not yet described in this proposal, as guidance documents for faculty involvement require negotiations to avoid conflicts. Prior to populating membership, CBHI leadership will consult with the Research Office, the Deans of participating Colleges, other Institutes and Centers, and the Office for Commercialization and Corporate Development to develop clear and consistent faculty participant agreements. These agreements will detail issues such as indirect cost return sharing models, intellectual property issues, cost sharing, and clear faculty responsibility guidelines. It anticipated that CBHI faculty would come from several Colleges across the University, and or will interact with a number of existing Centers, Institutes, and Programs on and off campus. Outreach, promotion, and recruitment will commence in 2018.

Initial Participating Programs and Colleges

- Superfund Research Program Center (Tanguay and Waters)
 - Environmental Health Sciences Center (Tanguay and Ho)
 - Sinnhuber Aquatic Research Center (Tanguay and Truong)
 - Linus Pauling Institute (Richard van Breemen)
 - The National Center for Digital Health Innovation (Melissa Haendel)
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- College of Agricultural Sciences
 - College of Pharmacy
 - College of Science
 - College of Public Health and Human Sciences
 - College of Veterinary Medicine
 - College of Engineering
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- Pacific Northwest National Laboratory
 - Oregon Health Sciences University
 - University of Oregon

A number of critical core facilities will support CBHI researchers. These core facilities will build upon the foundation of existing capabilities on campus leveraging prior investments and agreements. CBHI will not replicate or compete with existing core facilities, but instead will help to consolidate, integrate, and maximize the efficiency of core facilities to help ensure financial sustainability. The creation and integration of core facilities will require thoughtful negotiations across colleges, institutes and centers that in some cases have invested substantially in creating and managing existing cores. Listed below are the planned core facilities.

Planned Core Facilities

- Administrative Support Pool
- SARL Aquatic Core
- Chemical Exposure Core
- Engineering Core
- Chemical Synthesis Core
- Integrated Health Sciences Core
- Cell Imaging and Analysis Core
- Small Molecule Analysis Core
- Bioinformatics and Modeling Core

Below is a Gantt chart detailing the implementation of each planned institute component. The implementation timeline will evolve with advisory panel input.

Activity	2018	2019	2020	2021	2022
Campus Engagement					
Advisory Panels					
Drug Discovery					
Exposure Science					
Green Chemistry					
Biomarkers and Diagnostics					
Translational Data Integration					
Technology Cores					
Administrative Support Pool					
Integrate SARL Aquatic Core					
Chemical Exposure Core					
Engineering Core					
Chemical Synthesis Core					
Integrated Health Sciences Core					
Cell Imaging and Analysis Core					
Small Molecule Analysis Core					
Bioinformatics and Modeling Core					
Health Technology Core					

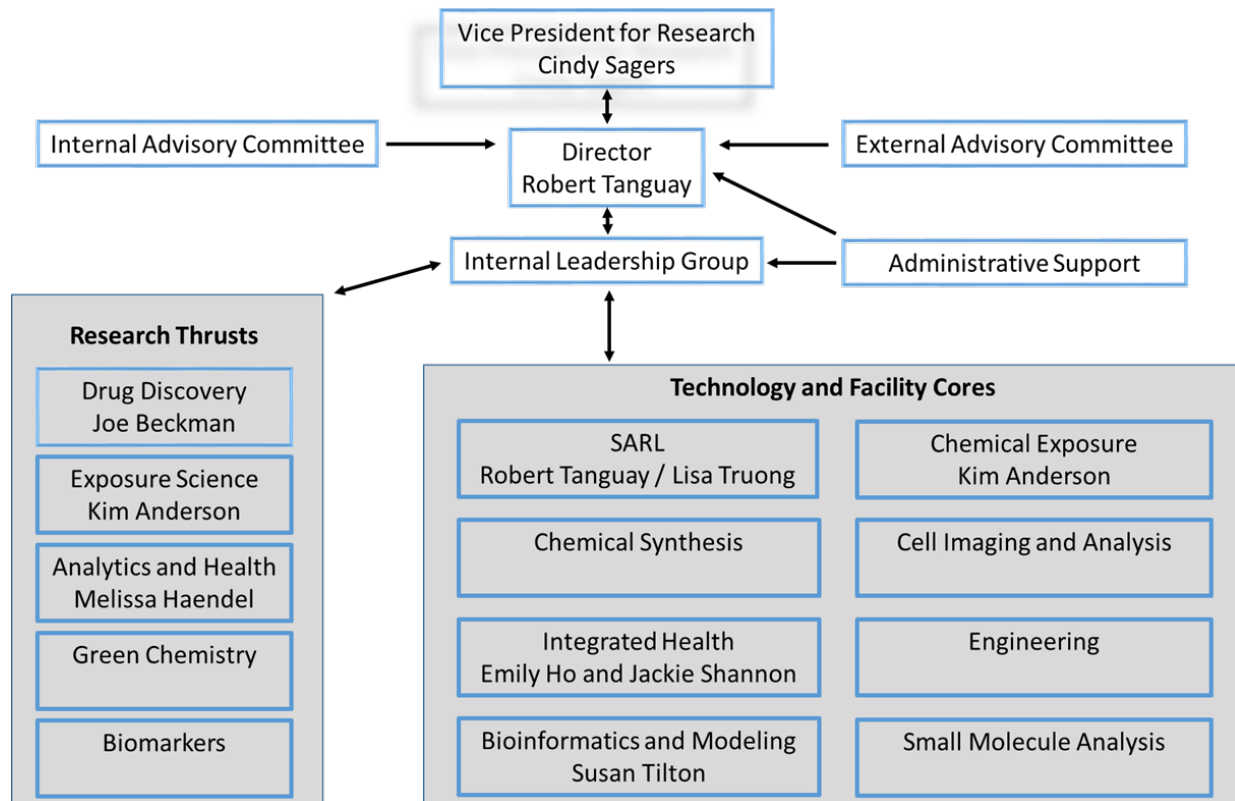
Initial and potential external funding sources

To begin the campus discussion and to launch CBHI, we will hold outreach events to advertise and initiate strategic planning activities. The formation of the internal and external advisory committees is the next priority. Initial revenue will include existing extramural and intramural support for the EHSC, SRC, and the SARL. The CBHI launch will benefit by recent successful efforts to integrate the professional administrative support of these existing centers. The Administrative Support Core includes Lisa Shepard (Fiscal Management) Shawn Tucker (Executive Management), and Mike Barton (Data Management). We will recruit additional professional support to this talent pool as revenues and administrative support demands increase. Within the SARL, Lisa Truong brings professional Project Coordination and Executive Management expertise.

Additional revenue streams will include:

- Direct extramural funding in the form of grants and contracts
- Indirect cost returns
- Facility core fee for service revenues
- Recruitments – bring in new expertise, leaders, instrumentation etc.
- Development Efforts
 - Foundations,
 - Commercial Sector
 - Royalty Revenues

Organizational Chart of the Institute



The director will be responsible for the operation and overall vision of the institute and will report directly to the Vice President for Research, Dr. Cindy Sagers.

The internal advisory board will be comprised of select faculty from across the university, including at least one representative from each college impacted by CBHI. Its role will be to guide faculty and staff recruitments, funding, and strategic planning.

The External Advisory Committee (EAC) will be comprised of academic and commercial leaders. The EAC will help to guide the research directions and strategic growth. The EAC will help to identify collaborators, research partners, and funding opportunities in federal, state, and commercial sectors.

The CBHI Director and the recruited research thrust and facility core leaders will encompass the Internal Leadership Group (ILG). The ILG is responsible for coordinating internal activities within CBHI. This group will maintain regular contact and will meet monthly to discuss CBHI activities and research. These meetings will help to formulate the goals for the CBHI and serve to address issues related to consistency of operation of the facility cores and research thrusts. The Fiscal, Executive, and Data Managers will attend meetings of the ILG to ensure direct coordination of activities between the Administrative and the Facility Cores.

A 5-year financial plan addressing all revenue sources and matching requirements

This financial plan and forecast will have six components 1) Extramural funds; 2) Indirect Cost Returns, 3) Fees generated from core facilities; 4) direct institutional support and matching funds, 5) Royalty revenues, and 6) Philanthropy.

By consolidating the existing programs to nucleate CBHI, we will leverage the existing extramural and intramural support. A summary of current support is described below.

	<u>Extramural</u>	<u>RO</u>	<u>ROH investments</u>
EHSC	\$100,00 (pending)	\$100,000	\$100,000
SRP	\$100,000	\$100,000	\$95,000
SARL	\$300,000	\$220,000	0