

Institute for Precision Health at UCLA (IPH)

URL: <https://www.uclahealth.org/precision-health>

The IPH is a virtual center that serves as a collaborative hub for transdisciplinary work across the David Geffen School of Medicine at UCLA, UCLA Health System, and UCLA College. It brings together faculty with a wide range of expertise across clinical medicine, computer science, engineering, public health, and the social sciences. The Institute serves as a home for several key programs and initiatives including the ATLAS 150k project, where the Institute is recruiting 150,000 patients across UCLA Health to participate in precision health research. Specifically, the goal of the ATLAS program is to create a robust and powerful big data engine that includes genetic and genomic data from consented patients and deidentified health data from the patient electronic health record. Through ATLAS, the IPH has created a platform for big data integration that is available to approved UCLA researchers and collaborators. Other precision health programs include the Center for Smart Health, the California Center for Rare Diseases at UCLA, and the Depression Grant Challenge.

Administrative Offices:

Facility Location: 1st floor of Center for Health Science (CHS) at UCLA, suite 12-139 and 12-159

Square Footage: ~1,200 square feet of office space, that includes 2 fax machines, 4 printers, and a combination of laptop and desktop computers. Housed within these offices are the Deputy Director for the IPH, an Executive Assistant, Program Manager, Project Coordinator, 6 genetic counselors, 2 work study students, and an Assistant Director for Clinical Informatics.

IPH Resources

Universal Consent

Embedded Clinical Research and Innovation (ECRI)

The Universal Consent, which was developed by the ECRI group, is the primary recruitment engine for the ATLAS 150k Program. UCLA established the ECRI unit to encapsulate experience from recent successful recruitment efforts that were embedded in clinical workflows within high volume clinical environments (e.g. a mammography unit, an ICU, and a nursing home). The ECRI team works together with clinical managers to develop communication materials, patient contact and consenting methods to minimize the impact on clinic workflow. For each study that they take on, the unit creates an implementation model and plan that is customizable to the project and is built around a lean concept, and that improves efficiency of the research study while creating little to no impact in a normal day to day high volume clinic. Support from the ECRI unit is prioritized for clinical trials and research studies that (1) are considered to be of high value to the health system (research results high likely to impact patient quality, efficiency, and care costs), and (2) must occur in busy and logistically challenging clinical environments that are likely to pose a barrier for conducting research.

The ECRI will also develop new capacities for presenting research opportunities during clinical encounters. One approach will focus on the use of “Best Practice Advisory” (BPA) alerts in the EHR. These alerts can be programmed to pop up messages that are either “passive” or “interruptive,” informing clinicians or research coordinators in real time when patients meet eligibility criteria. In addition, future interface enhancements to the CTMS – EHR interface will enable clinical trial eligibility criteria expressed in the CTMS to be transferred into the EHR to automatically create BPA triggering criteria. Similar clinical research alerts will also be used to warn clinicians if otherwise-eligible patients are about to be placed on a treatment that would make them ineligible for a trial, and to alert clinicians regarding eligibility for studies that are not represented in the CTMS, such as those that target prevention, self-management or lifestyle.

Biobank - Honest broker

UCLA Translational Pathology Core Lab (TPCL)

TPCL offers state of the art pathology services. TPCL occupies approximately 2000 sq ft. on the first floor and A level of the Center for Health Sciences, with main lab areas in CHS 14-127 and 14-112. This includes about 950 sq. ft. of Digital Pathology Services in 14-112, where all scanners and digital analysis software is housed, and approximately 300 sq. ft. for freezer storage. TPCL equipment includes a Perkin Elmer Vectra Polaris Quantitative Digital Pathology Imaging system, Leica/Versa high-throughput scanning system (fluorescence), Aperio AT high throughput scanning system (brightfield, web enabled), Definiens image analysis software, Leica laser capture microdissection LMD 700 (located in the ALMS core in CNSI), ten Revco ULT II Fischer -80 freezers, one Revco -80C chest freezer, Leica BondRX autostainer, Microm HM 550 Cryostat, Leica RM 2135, Microm HM 355S, one Thermo Shandon Excelsior ES tissue processor, Embedding Machine Model HistoCenter II and an Olympus BX41 microscope. TPCL offers a wide range of standard histology services including paraffin and OCT processing and embedding, sectioning, TMA

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preparation, and immunohistochemical and immunofluorescent staining. Animal and human pathologic consultation is also available. Finally, the TCPL is a CAP accredited biorepository with 24/7 temperature monitored -80 and liquid nitrogen storage capabilities. The TPCL is a major asset to facilitate accomplishing a variety of research goals and objectives.

DNA Extraction Lab

UCLA Technology Center for Genomics & Bioinformatics (TCGB)

UCLA Technology Center for Genomics & Bioinformatics (UCLA TCGB) is located in CHS 38-123 with approximately 2314 sq. ft laboratory space ([http:// http://pathology.ucla.edu/tcgb](http://pathology.ucla.edu/tcgb)). The UCLA TCGB, directed by Dr. Xinmin Li, has 8 Ph.D. level scientists and a total staff of ten, who together have 76 years combined genomics experience. This high throughput genomic Center equipped with all major next generation sequencing/microarray instruments, sophisticated bioinformatics tools and big data management systems.

In summary, the UCLA TCGB provides next-generation sequencing (NGS)/microarray platforms, an integrated bioinformatics pipeline and technical/intellectual expertise, which has significantly facilitated scientific findings and yielded numerous high impact publications

Genomics Core

UCLA Neuroscience Genomics Core (UNGC)

The UNGC currently occupies approximately 1500s sq/ft of dedicated laboratory space in the Gonda research facility on the UCLA campus. Installed capital equipment includes two Illumina HiSeq_2500 and one HiSeq 4000 sequencers, one cBot cluster station, one Illumina LIMS capable iScan confocal laser scanner with Autoloader II automatic loading support capable of scanning all Illumina beadchip formats. One Tecan Evo 150 robotic liquid handling platform with Illumina GTS and Infinium robot control software installed, one Tecan Evo 100 robotic liquid handling platform and two 48 place temperature controlled beadchip processing racks, one SciGene Little Dipper microchip processing robot, one Tomtec autosealer and one MJ Research tetrad 2 thermocycling system. Additional equipment includes one Covaris M220 nucleic acid shearing system, one Covaris E210 high throughput nucleic acid shearing platform one VisonMate SR 2D barcode plate scanner, one Agilent 4200 TapeStation, one Caplier Labchip XT nucleic acid size selection system, six programmable incubation ovens, six microplate heat blocks, two tabletop centrifuges, one Molecular Dynamics fluorescent microplate readers, one speedvac and four high capacity microplate shakers, 8 benchtop precision shakers and -20 and -80 freezer storage. Computer resources include ten networked workstations. The UNGC has 60TB of network storage space with RAID backup.

The UNGC is equipped to provide sequencing services, including library preparation and QC, using all current Illumina and compatible third-party chemistries and kits on our HiSeq 4000 instrumentation.

The UNGC supports all versions of Illumina's whole genome and custom iSelect Infinium genotyping assays, including methylation analysis.

E-Honest Broker

UCLA Clinical and Translational Science Institute (CTSI) Bioinformatics Program

The CTSI Informatics Program provides access to electronic health record (EHR) data across multiple institutions, builds computation resources for data management, analysis and sharing and formulates and implements coordinated plans for providing data security. Program achievements include:

A data consulting service to help researchers access UCLA xDR data.

- Enabling cohort search in two federated networks: 1) the University of California Research Exchange (UC ReX), involving the five UC Medical Centers; 2) the Los Angeles Data Resource (LADR), involving six LA-area medical centers.
- Spearheading biomedical informatics training through an ACGME-accredited clinical informatics fellowship program; graduate-level training in biomedical informatics; and introductory researcher workshops for instruction in various informatics tools and standards.