



4단계 BK21
러닝헬스시스템융합교육연구단
BK21 FOUR R&E Center for Learning Health System



BrainKorea21

BK21 FOUR L-HOPE Program

for Community-Based Total Learning Health Systems

L-HOPE

Introduction

• Message from the Director

We pursue a community-based total learning health system that enables individuals to lead healthy lives and not merely curing diseases. The 'Learning Health Systems', which focuses on 'health' not 'medical treatment', is a self-evolving health system in which daily life is detailed and analyzed to create new knowledge and which continuously renews daily life.

For the implementation of this system, we create a virtuous cycle structure of education, research and industry-academic cooperation focused on the Living Lab. We particularly yearn to rebuild the crucial public health safety net as the learning health system paradigm and contribute to the creation of a society where everyone is healthy by focusing on the health promotion of people who may be more marginalized in the COVID-19 situation.

Aiming for this vision, we nurture world-class trans-disciplinary researchers who can lead a innovative digitally-integrated healthcare system by reorganizing the curriculum into four domains — Healthcare System, Biomedical Healthcare, Community Healthcare and Digital Health Data.

We hope to collaborate with researchers from around the world in this endeavour, to build public-focused value-based smart healthcare systems for all.

BK21 FOUR L-HOPE Program for Community-Based Total Learning Health Systems,
Transdisciplinary Major in Learning Health Systems, Graduate School of Korea University

Haejoo Chung, RPh, MSc, PhD 정혜주

• What is the BK21 FOUR Programs?

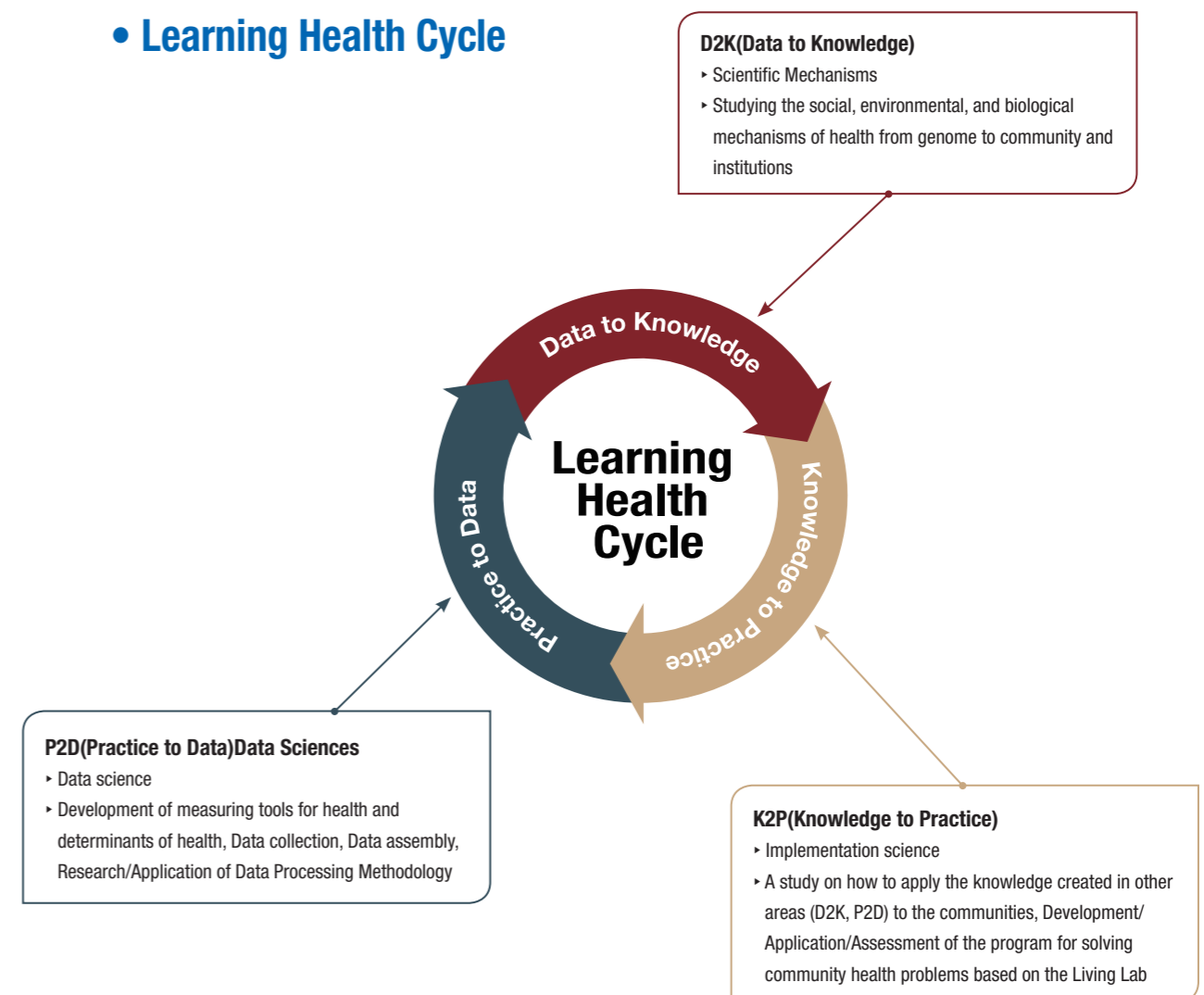
BK21 (Brain Korea 21) FOUR Program is a scholarship program for graduate students funded by the Korean government. The objective is to strengthen the teaching and research capacity of outstanding graduate schools and foster next-generation researchers in order to boost future national competitiveness. The program also supports new knowledge and skills based on creativity. The Transdisciplinary Major in Learning Health Systems (LHS) was launched at Korea University in September 2020.



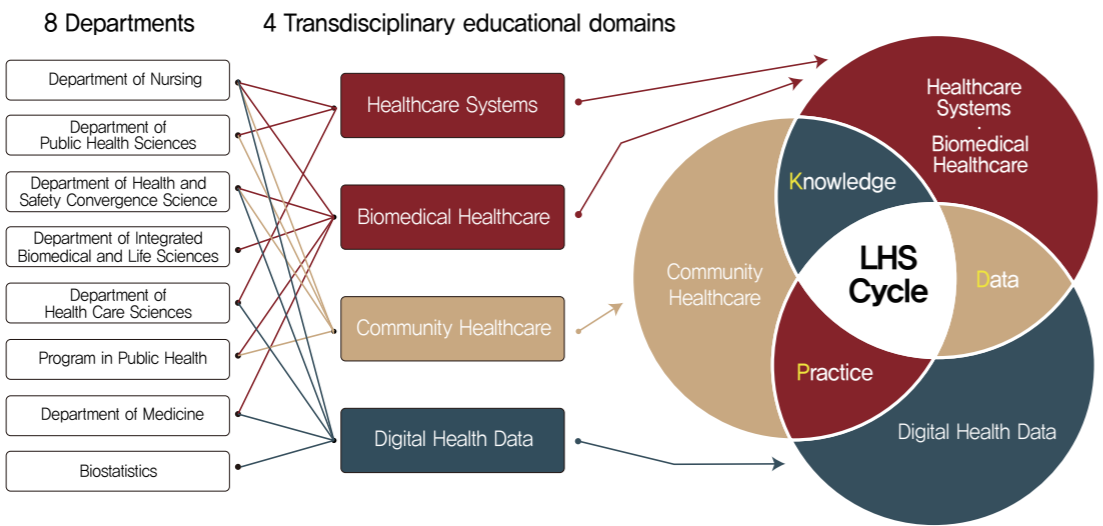
• Learning Health Systems

The Learning Health Systems (LHS) is a self-evolving health system in which daily life is detailed and examined to generate new knowledge. It is also a system that continuously renews daily life. Through this, a community-based total learning health system was created to combine various community resources and provide a fully tailored healthcare solution by outlining, integrating, and sharing them, with the goal of creating the Living Lab.

• Learning Health Cycle



- ▶ We categorize researchers from the eight departments participating in our program into four transdisciplinary educational domains of the Transdisciplinary Major in LHS and arrange them in a Learning Health Cycle. We can link our education and research based on the composition of research groups



D2K	Healthcare Systems	<ul style="list-style-type: none">▶ A study on the social and environmental mechanism▶ Research on Institutions and Governance
	Biomedical Healthcare	<ul style="list-style-type: none">▶ Biomedical mechanism study on health▶ Development of diagnostic technology▶ Clinical data collection
K2P	Community Healthcare	<ul style="list-style-type: none">▶ A study on how to apply the knowledge created in other educational domains (Healthcare Systems, Biomedical Healthcare, Digital Health Data) to the communities▶ Development/Application/Assessment of the program for solving community health problems based on the Living Lab
P2D	Digital Health Data	<ul style="list-style-type: none">▶ Measuring tools (survey, instruments, etc.) development studies on health research and biomedical/environmental/social determinants of health▶ Data collection, data assembly and research on data processing methodology using the developed tools

• Transdisciplinary Curriculum

- ▶ To nurture experts in smart healthcare, **Transdisciplinary Major in LHS**, based on **four transdisciplinary education domains**, was established in the graduate curriculum in September 2020.
- ▶ We offer a transdisciplinary major that consists of a double major and a major substitution. Students should choose one of these options.

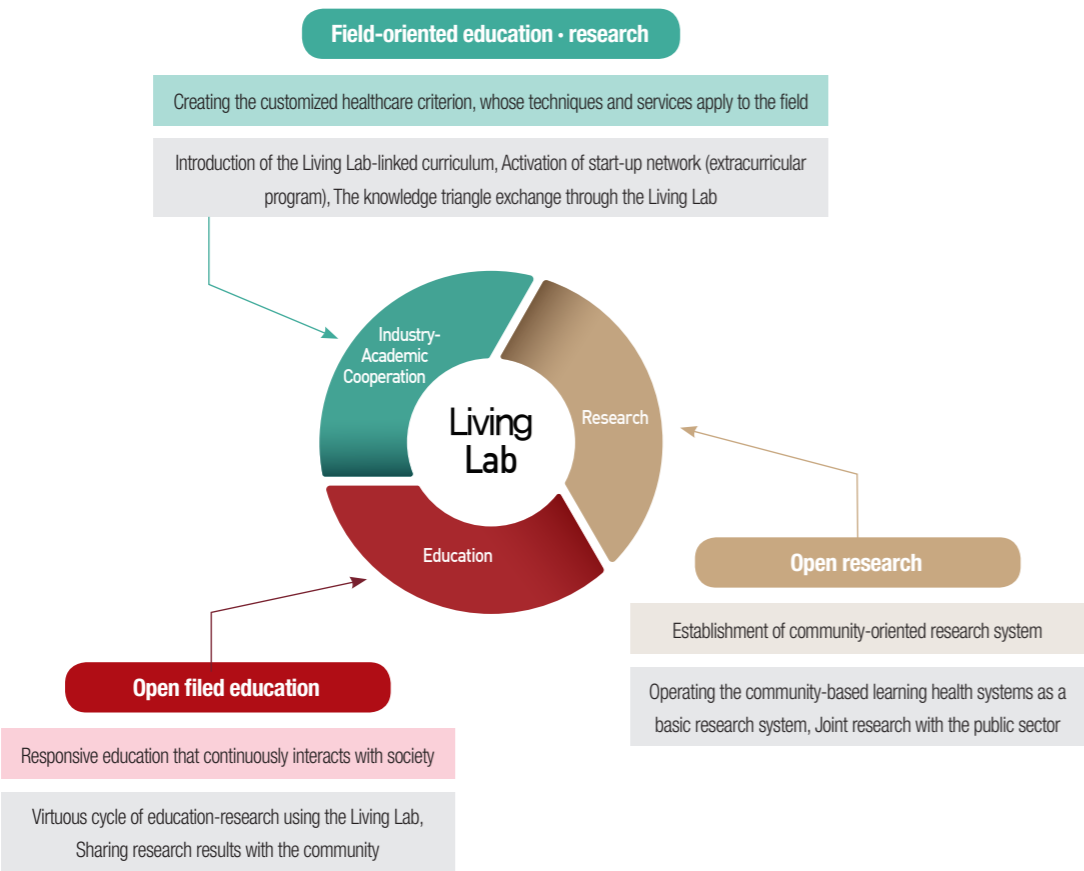
Option	Double Major	Major Substitution
Major	Stay in the original major	Change to LHS
Required Credits	<ul style="list-style-type: none">▶ Students should fulfill the requirements of their original major and take the extra credit of comajor (LHS)▶ The original major and LHS can share 6 credits	<ul style="list-style-type: none">▶ Students should fulfill the requirement of LHS
Degree	Degree Title (Department)	
Certificate	Department, Original major and LHS	Department, LHS

• Plan for supporting academic activities of graduates

- ▶ Scholarships are only available to eligible students
- ▶ Supporting academic activities and research in the customized healthcare field: providing opportunities to participate in seminars on major diseases, finding excellent multidisciplinary research projects, and coteaching from a variety of the research groups
- ▶ Host regular seminars and lectures with world-class scholars for on-campus academic exchanges
- ▶ Providing financial assistance for participation in conferences and short-term workshops: international/domestic academic conferences; international trips to organizations, institutes, and university workshop programs
- ▶ Providing incentives for the best research paper
- ▶ Programs to strengthen international research abilities: classes for writing proposals and papers in English, management of research profile, introduction to healthcare and LHS research data
- ▶ Operating career development program



• The Living Lab as a virtuous cycle structure of education, research and industry-academic cooperation



• Plans for international joint research

Support for publication in international journals	<ul style="list-style-type: none">▶ Promote international collaborative research through the academic research committee▶ Support for article processing charges for OPEN ACCESS only publications in top international journals
Exchange plans between foreign universities and research institutes	<ul style="list-style-type: none">▶ Signed MOU, cohosting various academic events and establishment of exchange program for researchers▶ Invitation of world-class researchers and outstanding scientists from abroad and support for staying in Korea▶ Operating the Uzbekistan Tashkent National Medical University–Korea University cooperative research program and expanding to other countries

• Collaborations between industry and university

BK21 FOUR Program for Learning Health Systems		
Community	Industry	Research Institutes
<ul style="list-style-type: none">▶ Local Government Institutes▶ Local Government Medical Institutions (ex. public health center)	<ul style="list-style-type: none">▶ Domestic Industry: LG Electronics	<ul style="list-style-type: none">▶ KIST, Toronto University, Korea Institute of Radiological & Medical Science
Big data	Product resources	Research resources
<ul style="list-style-type: none">▶ Health insurance data▶ Behavioral patterns▶ Social and environmental data▶ Clinical data & Prognosis	<ul style="list-style-type: none">▶ Big data of vulnerable social class & Health care product needs▶ Product effectiveness feedback	<ul style="list-style-type: none">▶ Big data of vulnerable social class & Required skills needs▶ Provide/Exchange research resources (Personnel, place, facilities)
Customized healthcare	Health care products	Source technology
<ul style="list-style-type: none">▶ Health Cloud System▶ Dispatch of health experts to local communities▶ Providing a prototype of health care products▶ Policy proposals on health-related issues	<ul style="list-style-type: none">▶ Rehabilitation devices & Robot sensor: coming and going, temperature, motion sensor, etc.▶ Air purifier	<ul style="list-style-type: none">▶ Establishment of intellectual property rights related to the healthcare sector



• Faculty

Domains	Professor	Department	Major	E-mail
Healthcare Systems	Mankyu Choi	Department of Health Care Sciences	Healthcare Management	mkchoi@korea.ac.kr
	Jae Wook Choi	Program in Public Health	Global Health	shine@korea.ac.kr
	Haejoo Chung	Department of Health Care Sciences	Health & Social Policy	hpolicy@korea.ac.kr
	Kyounghae Kim	Department of Nursing	Nursing	kyounghaekim@korea.ac.kr
	Sungchul Park	Department of Health Care Sciences	Health Economics	sungchul_park@korea.ac.kr
	Seok-Jun Yoon	Program in Public Health	Healthcare Management	yoonsj02@korea.ac.kr
Biomedical Healthcare	Joon-Yong An	Department of Integrated Biomedical and Life Sciences	Neuroscience	joonan30@korea.ac.kr (https://joonanlab.github.io/)
	Geum-Joon Cho	Department of Medicine	Obstetrics and Gynecology	geumjoon@korea.ac.kr
	Byoung Jo Kim	Department of Medicine	Neurology	nukbj@korea.ac.kr
	Nan Hee Kim	Department of Medicine	Endocrinology & Metabolism	nhkendo@gmail.com
	Ji-Hwan Kim	Department of Public Health Sciences	Advanced prosthodontics & Digital dental industry	kjh2804@korea.ac.kr
	Junesun Kim	Department of Public Health Sciences	Neuroscience	junokim@korea.ac.kr
	Suhng-Wook Kim	Department of Health and Safety Convergence Science	Hematology(Blood genotyping)	swkimkorea@korea.ac.kr
	Ju-Han Lee	Department of Medicine	Pathology(Digestive)	repath@korea.ac.kr
	Jae-Yong Park	Department of Integrated Biomedical and Life Sciences	Neuroscience(Brain)	jaeyong68@korea.ac.kr
	Geun Hee Seol	Department of Nursing	Cardiovascular Physiology	ghseol@korea.ac.kr
	Hyung Joo Suh	Department of Integrated Biomedical and Life Sciences	Food Processing & Microbiology	suh1960@korea.ac.kr
Community Healthcare	Sung Ok Chang	Department of Nursing	Basic Nursing	sungok@korea.ac.kr
	Dal Woong Choi	Department of Health and Safety Convergence Science	Toxicology	dwlove@korea.ac.kr
	Jina Choo	Department of Nursing	Community Nursing	jinachoo@korea.ac.kr
	Myung Ki	Program in Public Health	Health Sociology	myungki@korea.ac.kr
	Jun-Ah Song	Department of Nursing	Nursing	jasong@korea.ac.kr
	Seunghyun Weon	Department of Health and Safety Convergence Science	Environmental Technologies & Air Pollution Control	s_weon@korea.ac.kr
	Bumchul Yoon	Department of Public Health Sciences	Physical therapy & Clinical kinesiology	yoombc@korea.ac.kr
Digital Health Data	Byung Chul Chun	Department of Medicine	Infectious Diseases Epidemiology	chun@korea.ac.kr
	Hae-Young Kim	Department of Health Care Sciences	Biostatistics & Public health	kimhaey@korea.ac.kr
	Juneyoung Lee	Biostatistics	Biostatistics	jyleeuf@korea.ac.kr
	Wonho Lee	Department of Health and Safety Convergence Science	Radiation Measurement & Imaging and Dosimetry	wonhol@korea.ac.kr
	Kyong-Whan Moon	Department of Health and Safety Convergence Science	Environmental Public Health	kwmooon@korea.ac.kr
	GyeongAe Seomun	Department of Nursing	Nursing Management	seomun@korea.ac.kr

BK21 FOUR L-HOPE Program for Community-Based Total Learning Health Systems,
Transdisciplinary Major in Learning Health Systems, Graduate School of Korea University

#169, B-dong, Hana Science Hall, Korea University, 145 Anam-ro, Seongbuk-gu, Seoul, South Korea

T. +822-3290-5629

E. hpolicy@korea.ac.kr, feelithere@korea.ac.kr

H. <https://health.korea.edu/>