강의개요

Drug discovery and development - Pharmacogenomics and beyond

본 수업에서는 빅데이터와 AI 기반 신약개발 연구 동향에 초점 맞춘다. 약물 발굴 단계에서 AI 적용 분야로 유효물질 탐색, ADME/Tox 예측 등 최신 AI 기술과 빅데이터의 잠재력을 활용한 다양한 연구 기술들에 대하여 알아본다. 또한 개인별 유전자에 따른 약물 반응을 연구/예측하는데 필요한 생명정보학적 접근 방식을 알아본다.

강의는 다음의 내용을 포함한다:

- Drug discovery and development 기본 개념
- Pharmacogenomics 기본 개념
- Proteins, molecules representation features
- 최신동향 AI기반 약물 개발 연구 소개

* 교육생준비물:
  강의 동영상 플레이가 가능한 컴퓨터
  Google Colab 사용 가능 컴퓨터

* 강의: 남호정 교수 (광주과학기술원 전기전자컴퓨터공학부)

Curriculum Vitae

Speaker Name: Hojung Nam, Ph.D.

▶Personal Info

Name Hojung Nam

Title Professor

Affiliation Gwangju Institute of Science and Technology (GIST)

▶Contact Information

123 Cheomdangwagi-ro, Buk-gu, Gwangju, 61005, Republic of Korea

Email hjnam@gist.ac.kr

Research interest : Bioinformatics, Systems Biology, Cheminformatics, Machine learning

Educational Experience

2001	B.S. in Computer Science, Sogang Univ., Seoul, Korea.
2003	M.S. in Computer Science, KAIST, Daejeon, Korea.
2009	Ph.D. in Bio and Brain Engineering, KAIST, Daejeon, Korea.

Professional Experience

2009-2013	Postdoctoral Researcher, Bioengineering, University of California, San Diego, CA USA
2013-2018	Assistant Professor, Gwangju Institute of Science and Technology (GIST)
2018-2023	Associate Professor, Gwangju Institute of Science and Technology (GIST)
2023-	Professor, Gwangju Institute of Science and Technology (GIST)

Selected Publications (Recent two years, CA only)

1. Bongsung Bae, Haelee Bae, **Hojung Nam***, "LOGICS: Learning optimal generative distribution for designing de novo chemical structures", Journal of Cheminformatics 2023 Sep 7;15(1):77.
2. Haelee Bae, **Hojung Nam***, "GraphATT-DTA: attention-based novel representation of interaction to predict drug-target binding affinity", Biomedicines 2023, 11(1), 67.
3. Hansol Lee, Songyeon Lee, Ingoo Lee, **Hojung Nam***, "AMP-BERT: Prediction of Antimicrobial Peptide Function Based on a BERT Model", Protein Science, 2022 Dec 3;e4529. doi: 10.1002/pro.4529.
4. Koon Mook Kang§, Ingoo Lee§, **Hojung Nam***, Yong-Chul Kim*, "AI-Based Prediction of New Binding Site and Virtual Screening for the Discovery of Novel P2X3 Receptor Antagonists", European Journal of Medicinal Chemistry, 2022 Jul 1;240:114556.
5. Hyunho Kim, Minsu Park, Ingoo Lee, **Hojung Nam*,** "BayeshERG: A Robust, Reliable, and Interpretable Deep Learning Model for Predicting hERG Channel Blockers", Briefings in Bioinformatics 2022 Jun 17;bbac211. doi: 10.1093/bib/bbac211.