NIBB-Chubu University

The 3rd Chubu University-NIPS-NIBB joint seminar "AI to Life System"

NIBB and NIPS have been promoting exchanges of personnel and information with Chubu University through joint seminars on the theme of "AI to Life System" since the fall of 2021, aiming for emergence through interdisciplinary research and the discovery and cultivating of young researchers. The first joint seminar was hosted by Chubu University in November 2021, and the 2nd seminar was organized by NIPS in January 2022.

On March 28, 2022, NIBB organized the 3rd joint seminar held as a hybrid meeting with Zoom online system at the Okazaki Conference Center. In addition to the lectures of ongoing research utilizing AI analysis methods at each institute, a small group discussion was held to promote new collaborative research between the three institutes. The group discussions were divided into two categories, "technology" and "science". In each category, four topics were set up, and researchers and students discussed each topic separately. This event helped to deepen mutual understanding between information science and life science, and promoted the budding of collaboration research leading to the "elucidation of life systems using AI.

Opening remarks by Dr, Kiyokazu Agata, the Director-General of NIBB.

Group discussion on the topics of gene and protein.

- Seminar information
  Lectures
  Takashi Ueda (NIBB)
  Junichi Chikazoe (NIPS)
  Seine Shintani (Chubu University)
- Group discussion
  1) Technology: Computer vision, Robotics, fMRI, and Electron Microscopy.
  2) Science: Gene and protein, Cell, Brain and sensory, and Brain and behavior.

The NIBB Genome Informatics Training Course

The NIBB Core Research Facilities regularly organizes a series of training courses on the most recently developed research techniques. The NIBB Genome Informatics Training Course (GITC) is specially designed for biologists who are unfamiliar with bioinformatics. In 2021, we held two sets of training courses on RNA-seq analysis. Each version of the RNA-seq analysis course was basically made up of two 2-day programs: one being a preparatory course (Introduction to NGS Analysis) concerning the basics of UNIX and R, and the other a practical course (Introduction to RNA-seq) for learning about the pipelines to RNA-seq analysis using next-generation sequencing data. These GITC courses offered lectures and hands-on tutorials. This year, all courses were held online to prevent the spread of COVID-19 infection. By virtue of the online system, we expanded the course audiences by accepting some of them as "auditors" who could receive only limited support during the hands-on practice.

Introduction to RNA-seq: From the Basics of NGS to de novo Analyses

- Organizers: Dr. Shuji Shigenobu and Dr. Ikuo Uchiyama (NIBB Core Research Facilities)
- Lecturers: Dr. Shuji Shigenobu, Dr. Ikuo Uchiyama, Dr. Masanao Sato (Hokkaido Univ.), Dr. Katsushi Yamaguchi, Ms. Hiroyo Nishide, Mr. Takanori Nakamura, Mr. Hiroki Sugiura (NIBB Core Research Facilities)

August 25 (Thu)–26 (Fri), 2021

(Practical Course) Introduction to NGS Analysis: Basics of UNIX, R, and NGS

- 31 participants and 16 auditors (including 2 from NIBB)
- Program:
  1. UNIX for Beginners
  2. Introduction to "R"
  3. Introduction to Statistics
  4. NGS Basic Data Formats and NGS Basic Tools
  5. Editor and Scripts
  6. Text Processing
  7. Exercises

September 15 (Thu)–16 (Fri), 2021

(Practical Course) RNA-seq Analysis Pipeline

- 28 participants and 16 auditors (including 3 from NIBB)
- Program:
  1. Introduction to RNA-seq
  2. NGS Basic Data Format and Basic Tools
  3. Visualization of NGS Data
  4. RNA-seq Pipelines: Genome-Based and Transcriptome-Based Approaches
  5. Multivariate Statistics
  6. Functional Annotation and Gene Ontology
  7. Exercises

Introduction to NGS Analysis: Basics of UNIX, R, and NGS

February 9 (Wed)–10 (Thu), 2022

(This program was the same as the above listed practical course)

■ 27 participants and 16 auditors (including 5 from NIBB)

Introduction to RNA-seq: RNA-seq Analysis Pipeline

March 2 (Wed)–3 (Thu), 2022

(This program was the same as the above listed practical course)

■ 27 participants and 12 auditors (including 5 from NIBB)