



**HACETTEPE UNIVERSITY
INSTITUTE OF NEUROLOGICAL SCIENCES
AND PSYCHIATRY**

Multidisciplinary Internship Program

- **Host:** Hacettepe University, Ankara, Türkiye
- **Units:**
 - Institute of Neurological Sciences and Psychiatry (Neuroscience, Biology)
 - Faculty of Pharmacy (Department of Analytical Chemistry)
- **Intern Name:** Mevsim Özkan
- **Internship Date & Duration:**
 - September 2025
 - 10-day internship followed by a congress trip

Overview

The student shadowed academics and the PhD students across the Institute of Neurological Sciences and Psychiatry; the Faculty of Pharmacy, Department of Analytical Chemistry, to understand roles, research themes, and laboratory culture. In parallel, the student conducted an independent mini-research project. The student received concise, expert-led tutorials on scientific data quality and analysis and observed ongoing experiments, with special attention to work on migraine. After these ten days, during the following week, the student attended the 22nd Congress of the International Headache Society (IHC) to follow the laboratory's presentations, learn from current international research, and observe researchers at different career stages. Prior to the meeting, the student attended focused lectures that explained the experiments for the data to be presented.

This ten-day internship integrated both departments and emphasized structured literature review skills using PubMed and Web of Science, understanding international research databases and ethical sourcing, hands-on laboratory practice in solution preparation and careful labeling, a capsule content assay using liquid chromatography, and distinctions between multidisciplinary and interdisciplinary teamwork.

Program Objectives

- Develop practical skills in fundamental laboratory methods
- Learn structured literature review methods using PubMed and Web of Science, understand international research databases, and ethical sourcing.
- Gain exposure to experimental design in neuroscience and biology.
- Perform basic analytical chemistry procedures, including solution preparation, calibration/standard curves, and capsule content assay.
- Build scientific communication skills via daily logs and a final mini-presentation.

Detailed Schedule (10 Days)

Days One to Five: Institute of Neurological Sciences & Psychiatry (Neuroscience)

Day 1 – Orientation & Safety

- **Supervisors:**
 - Prof. Dr. Hülya KARATAŞ KURŞUN
 - Lecturer Dr. Canan ÇAKIR-AKTAŞ
- **Content:**



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- Program briefing; laboratory safety covering biosafety, personal protective equipment, chemical handling, and waste management.
- Introduction to the department and ongoing projects; meet supervisors, lecturers, and doctoral students.
- **Seminar:** How to search the literature effectively using PubMed and Web of Science, including keywords and citation trails.

Day 2 – Department Tour and Research Snapshots

- **Supervisors:**
 - Lecturer Dr. Buket Nebiye DEMİR
 - Lecturer Dr. Canan ÇAKIR-AKTAŞ
- **Content:**
 - Short talks by researchers and the students, explaining their questions and tools.
 - Laboratory demonstration.
 - Overview of microscopy and characterization, including optical and confocal approaches.

Day 3 – Sample Handling

- **Supervisor:**
 - Lecturer Dr. Melike SEVER BAHÇEKAPILI
- **Content:**
 - Hands-on practice in basic sample preparation, use of balances and volumetric glassware, and careful calibration of micropipettes.
 - Accurate bottle and tube labeling with dates, contents, and hazards.
 - Preparation of standard solutions and recording of uncertainties in the laboratory notebook.

Day 4 – Introduction to Genetics and Molecular Biology; Ethics and Animal Research

- **Supervisor:**
 - Lecturer Dr. Melike SEVER BAHÇEKAPILI
- **Content:**
 - Seminar on the principles of genetics and molecular biology.
 - Demonstration of polymerase chain reaction and gel visualization using archived samples.
 - Discussion: definitions and differences between multidisciplinary and interdisciplinary work; brief foundation for protein research.
 - Ethical overview of animal research.
 - Shadowed research on in vivo mice experiments with a focus on brain and retinal ischemia and migraine models. The student only observed under licensed personnel.

Day 5 – Neuroscience: Experimental Design and Data Thinking

- **Content:**
 - Observation of a selected workflow, such as tissue sectioning from mice tissues and staining, or previously recorded behavioral data.
 - Guided reflection on controls, sources of error, and data integrity.



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- Immunostaining workflow overview, tissue handling, imaging, and basic region-of-interest measurements.

Days Six to Nine: Faculty of Pharmacy Department of Analytical Chemistry

- **Supervisor:**
 - Prof. Dr. Mustafa ÇELEBIER

Day 6

- **Content:**
 - Safety refresher for chemicals and solvents.
 - Hands-on solution preparation, glassware care, and a clear labeling system for pipettes and consumables.
 - Quality control concepts: blanks, standards, replicates, and record-keeping.

Day 7

- **Content:**
 - Capsule content assay using liquid chromatography: supervised sample collection, extraction, and a stepwise dilution plan.
 - Calculation of active ingredient per capsule; discussion of content uniformity compared with the label claim.
 - Documentation of all steps, calculations, and uncertainties.

Day 8

- **Content:**
 - Data analysis and simple visualization.
 - Draft of a short results note including methods, results, discussion, and limitations.
 - Integration of findings for the planned poster.

Day 9

- **Content:**
 - Prepared a calibration curve from a certified reference standard and performed controlled serial dilutions to quantify the active substance in a capsule.
 - Measured standards and samples in the same session using liquid chromatography; constructed a linear calibration and applied dilution factors to report content in milligrams per capsule.
 - Verified quality with a blank, repeat injections for precision, and a spiked recovery sample; compared the calculated value with the label claim.

Day 10: Synthesis & Presentation

- **Content:**
 - Student prepared a 5–7 slide talk covering: background, methods, key observations, and take-home messages.
 - Feedback session with supervisors, discuss next-step learning goals.

Notes

Where animal procedures are involved, the student only observes under licensed personnel.