Advanced Biochemistry

2 units (selection)
Teacher of course

Target〉 This class introduces biological regulations by signal transduction in multicellular organisms.

Outline〉 Biological regulations involving enzymes, substrates, and other macromolecules are introduced. Molecular mechanisms of expression of biological activities are especially focused.

Style〉 Lecture

Keyword〉 ***signal transduction, signaling molecule, organelle***

Fundamental Lecture〉 "**Biochemistry 1**"(1.0), "**Cell Biology**"(1.0)

Relational Lecture〉 "**Advanced enzyme engineering**"(0.5), "**Biological macromolecular chemistry**"(0.5)

Requirement〉 Students are required to have a good understanding of undergraduate-level biochemistry.

Goal〉

1. Understanding of regulatory mechanism of synthesis and secretion of signaling molecules.
2. Understanding of signal transduction and its regulatory factors in cells.

Schedule〉

1. Cell structure and role of organelles
2. Biochemical techniques for studies of regulation of signal transduction
3. Imaging techniques for studies of regulation of signal transduction
4. Synthesis of peptide signaling molecules
5. Post-translational modifications of signaling molecules (1) Addition and processing of carbohydrate chains
6. Post-translational modifications of signaling molecules (2) Processing of polypeptides
7. Post-translational modifications of signaling molecules (3) Processing proteases and their substrates
8. Post-translational modifications of signaling molecules (4) Physiological functions of processing proteases
9. Regulation of secretion of signaling molecules
10. Quality control of signaling molecules (1) Intracellular transport
11. Quality control of signaling molecules (2) Intracellular degradation system
12. ER stress response
13. ER chaperones
14. Transcriptional regulation by ER stress
15. Development of new drugs targeting regulatory factors for signal transduction
16. Report preparation

Evaluation Criteria〉 Evaluation by report (100%)

Textbook〉 To be introduced in the class

Reference〉 To be introduced in the class

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216721

Student〉 Able to be taken by only specified class(es)

Contact〉
⇒ 生物事務室(M棟703)

Note〉 When you take this class, it is necessary to do preparation for 2h and review for 2h everry 2h class for your understanding and taking credit.