Time: Monday, October 26, 2015 13:30-15:10 Place : NIG B202 (Library 2F)

Title: Developmental Biology IV / Integrated Brain Science I,II
Topic: Cellular recognition
Lecturer: Tatsumi Hirata and Yasushi Hiromi

Article:
Takeichi M, Ozaki HS, Tokunaga K, Okada TS.
Experimental manipulation of cell surface to affect cellular recognition mechanisms.
Dev Biol. 1979 May;70(1):195-205.
http://nigwwwi.nig.ac.jp/local/jimu/soken/courses/devbiol4_2015/151026Takeichi.pdf

来週の発生生物学 IV で取り上げるのは、カドヘリンの発見で有名な竹市雅俊先生の 1979 年の論文です。でも、この論文にカドヘリンは登場しません。細胞接着の分子的実体が分かる前の論文だからです。

私がこの論文を選んだ理由は「まるで遺伝学専攻の入試問題のようで面白い！」と思ったからです。この講義では、この論文を使って、実験の組み立て方や科学的論理について考えてみたいと思います。遺伝学専攻の入試にリベンジしたいと思ってる方は大歓迎です。下の英文紹介文を読んで、質問について考えておいて下さいね。

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ivermectin: 6,265
autophagy: 21,388
cadherin: 26,332

These are the number of hits in PudMed search using the keywords listed above. This is just one evidence for the importance of the cell-adhesion molecule cadherin in life sciences. The paper we are going to read next week is written by Masatoshi Takeichi, the discoverer of cadherin. Prior to this work Takeichi and colleagues had found that cell-cell adhesion can be classified into two mechanisms according to the requirement of Ca++; Ca++-dependent cell adhesion eventually lead to the discovery of cadherin. In this paper, they selectively inactivate one or the other mechanism to “manipulate” intercellular adhesion.

As you can see from the title of the article, the theme of the paper is not “cell adhesion”,

but is “cell recognition”. Before reading this paper try to think about the following questions:

- How would you describe the concept of “cell recognition”?
- What do cells have to do to achieve “cell recognition”?
- What kind of experiments would you design to demonstrate “cell recognition”?

Then read the paper and find out what the authors actually did. You don't have to know about cadherin to appreciate this paper. Put yourself in pre-molecular biology days, and try to think which of the results presented is most exiting for you.

Reading this paper will also be a good exercise on experimental design and logic; think about which is the main experiment and which are control experiments. In light of your concept of “cell recognition”, are there experiments that you wish to add?