理学部セミナー

日時：　１１月１７日（木曜）　１６時３０分から１８：００まで
場所：　研究棟７３９室（談話室）

Talk 1: 16:30 - 17:15

The Sec14-Superfamily and Mechanisms of Crosstalk Between Lipid Metabolism and Lipid Signaling
Professor Vytas A. Bankaitis
Department of Cell & Developmental Biology, Lineberger Comprehensive Cancer Center, School of Medicine, University of North Carolina, Chapel Hill, USA

Lipid signaling pathways define central mechanisms through which eukaryotic cells respond to extracellular cues and regulate the spatial and temporal activities of major intracellular systems. An effective lipid signaling program relies on an orchestrated coupling between lipid metabolism, lipid organization, and the action of protein machines that execute appropriate downstream reactions. Recent advances suggest new insights into the mechanisms by which Sec14-like lipid binding proteins imprint the lipid metabolome onto the control of phosphoinositide signaling. Using membrane trafficking control as primary context, I will explore the idea that the Sec14-protein superfamily defines a set of modules engineered for the sensing of specific aspects of lipid metabolism and subsequent transduction of 'sensing' information to a phosphoinositide-driven 'execution phase'. In this manner, the Sec14–superfamily connects diverse territories of the lipid metabolome with phosphoinositide signaling in a productive 'crosstalk' between these two systems. I will describe a physical picture of what 'crosstalk' means in the context of Sec14-like proteins and the coordination of lipid metabolism with membrane trafficking. Mechanisms of crosstalk, where non-enzymatic proteins integrate metabolic cues with the action of interfacial enzymes, represent unappreciated regulatory themes in lipid signaling.

Talk 2: 17:15 - 18:00

Revisiting Nuclear Phospholipase C Signalling in Myelodysplastic Syndrome (MDS)
Professor Lucio Cocco
Cellular Signalling Laboratory Department of Anatomical Sciences, University of Bologna, Italy

Phosphoinositide-specific-phospholipase C (PI-PLC) is involved in several cell functions. In addition nuclear signalling elicited by PI-PLCβ1 plays an important role in the control of the balance between cell cycle progression and apoptosis. Recent findings indicate that PI-PLCβ1 is involved in the progression of MDS to acute myeloid leukemia (AML) and strengthens the contention that the nuclear lipid signalling is essential for physiological processes such as cell growth and differentiation in MDS. Moreover, the comprehension of the role of nuclear PI-PLCβ1 might contribute to the further clarification of the therapeutic activity of some drugs currently used in MDS, such as azacitidine and VPA, and possibly pave the way for new therapeutic approaches in these patients, as the quantification of the expression of PI-PLCβ1 could represent an attractive new predictive factor for the responsiveness to demethylating agents. However, further investigations are needed to fully understand the molecular mechanisms underlying the MDS progression into AML, but it is now clear that signal transduction pathways can be considered as innovative therapeutic targets in MDS treatments.

Bankaitis 教授と Cocco 教授は「第 10 回日本生化学会バイオフロンティア国際シンポジウム」出席のため来日されますが、この度上記のセミナーを本学で開催することになりました。ホスファチジルイノシトール転移タンパク質 Sec14 ファミリーと脂質代謝との関係、核内イノシトールリン脂質代謝酵素が関係する骨髄異形成症候群に関する最先端の研究内容をお話いただく予定です。多数の参加を歓迎します。

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