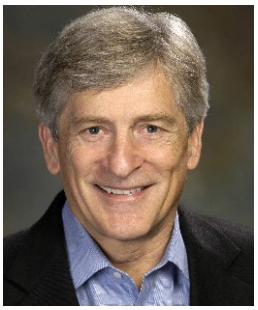
SCIENTIFIC SEMINAR



James C. Paulson

The Scripps Research Institute

Inhibitory Siglecs as Immune Checkpoints

Immune cells continuously integrate activating and inhibitory signals to distinguish self from non-self and maintain immune homeostasis. Siglecs—sialic acid-binding immunoglobulin-like lectins—constitute a major family of glycan-recognizing receptors that contribute to this balance. Many Siglecs contain cytoplasmic inhibitory motifs and function as immune checkpoints by sensing sialylated glycans and attenuating signaling from activating immune receptors. Their inhibitory activity depends critically on their spatial organization and recruitment to immune synapses, where they can modulate signaling in B cells, natural killer cells, macrophages and other immune populations. These mechanisms, essential for maintaining self-tolerance, can also be exploited by tumors through altered sialylation to suppress anti-tumor immunity. Building on fundamental studies of Siglec–glycan recognition, James Paulson and colleagues have developed chemical and glycoengineering strategies to manipulate these pathways. Targeting the Siglec–sialic acid axis therefore offers opportunities both to induce immune tolerance and, conversely, to release inhibitory glycoimmune checkpoints and enhance anti-tumor immune responses.

CIC bioGUNE
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
EXCELENCIA SEVERO OCHOA

Tuesday
September 22
Atrio 800
12.00H

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