**Dysfunction of Transmembrane Receptors: Implications for Obesity/Diabetes and Therapeutic Strategies**

**Abstract**: Our goal is to understand the dysfunction of membrane receptors in metabolic diseases such as obesity and diabetes. These diseases represent major public health issues, with more than 1.5 billion people being overweight, over 500 million people are with obesity, and more than 350 million people affected by diabetes worldwide. Specifically, the focus will be on two membrane receptors: the GLP-1 receptor, which belongs to the family of G-protein coupled receptors (GPCRs), and the leptin receptor. Molecular alterations of these receptors, through post-translational modifications or mutations found in humans, impair their function and contribute to the development of obesity and diabetes. Biochemical, pharmacological, and proteomic approaches, particularly bioluminescence resonance energy transfer (BRET) and time-resolved fluorescence resonance energy transfer (TR-FRET) techniques are used to understand the underlying mechanisms of functional impairment and to find therapeutic solutions. The molecular and cellular studies are complemented by investigations using mouse models.

Julie Dam holds a PhD in Biochemistry from the University Paris Diderot. As a postdoctoral fellow, she joined Pr. Roy Mariuzza’s lab at the Center for Advanced Research in Biotechnology, University of Maryland (USA), where she studied Natural Killer cell receptors, and later joined Dr. R. Jockers’ team at the Institut Cochin in Paris to study membrane receptor function. She is now an INSERM research director and co-leads the "Functional Pharmacology and Pathophysiology of Membrane Receptors" team at the Institut Cochin. Her research combines molecular, cellular and *in vivo* approaches to study how membrane receptors regulate cell function and their role in obesity and type 2 diabetes, focusing on leptin receptor and GPCRs. As primary targets of currently available prescribed drugs, GPCRs are of particular interest. She uses and develops BRET-, TR-FRET- and enzyme complementation- based biosensors to study the molecular mechanism of action of these receptors.

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