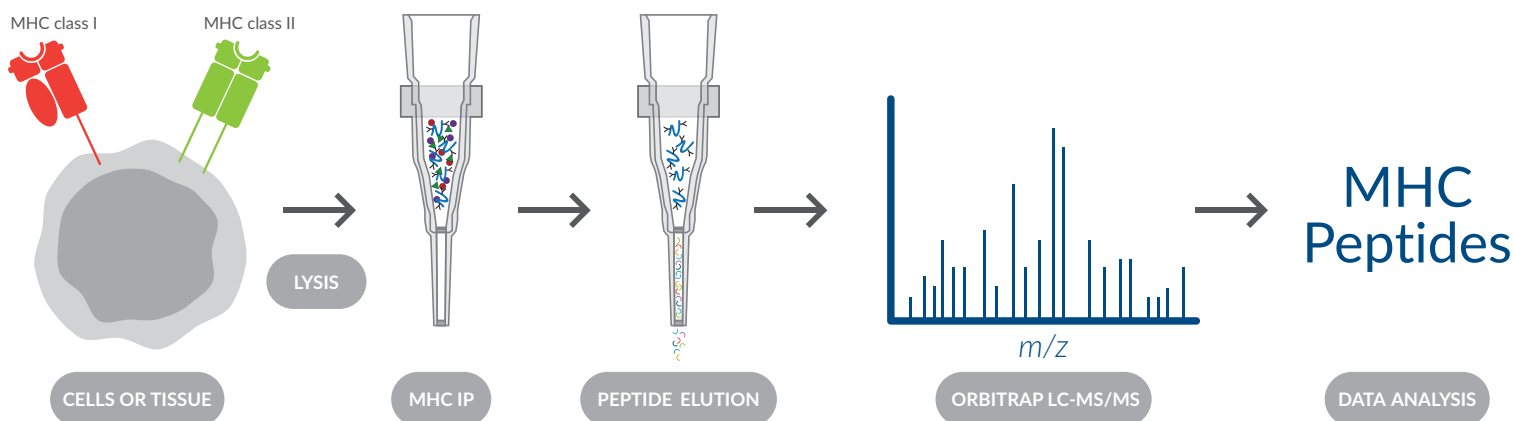# Immunopeptidome Profiling

Major histocompatibility complexes (MHC) act as the machinery for antigen presentation to T cells in the acquired immune system. They function to display peptide fragments of processed proteins (antigens) on the cell surface for recognition by T cell receptors, triggering an immediate T cell activation and expansion. Characterizing the antigens involved (immunopeptidome profiling) is paramount to generating tools for targeted antitumor therapies. Cayman, in partnership with MS Bioworks, has developed a workflow to enable MHC class I and II Associated Peptide Proteomics (MAPPs). Our collective expertise provides efficient, cost-effective deep sequence analysis of immunogenic peptides for the identification of neoantigens and potential immunogenic sequences in biologics.
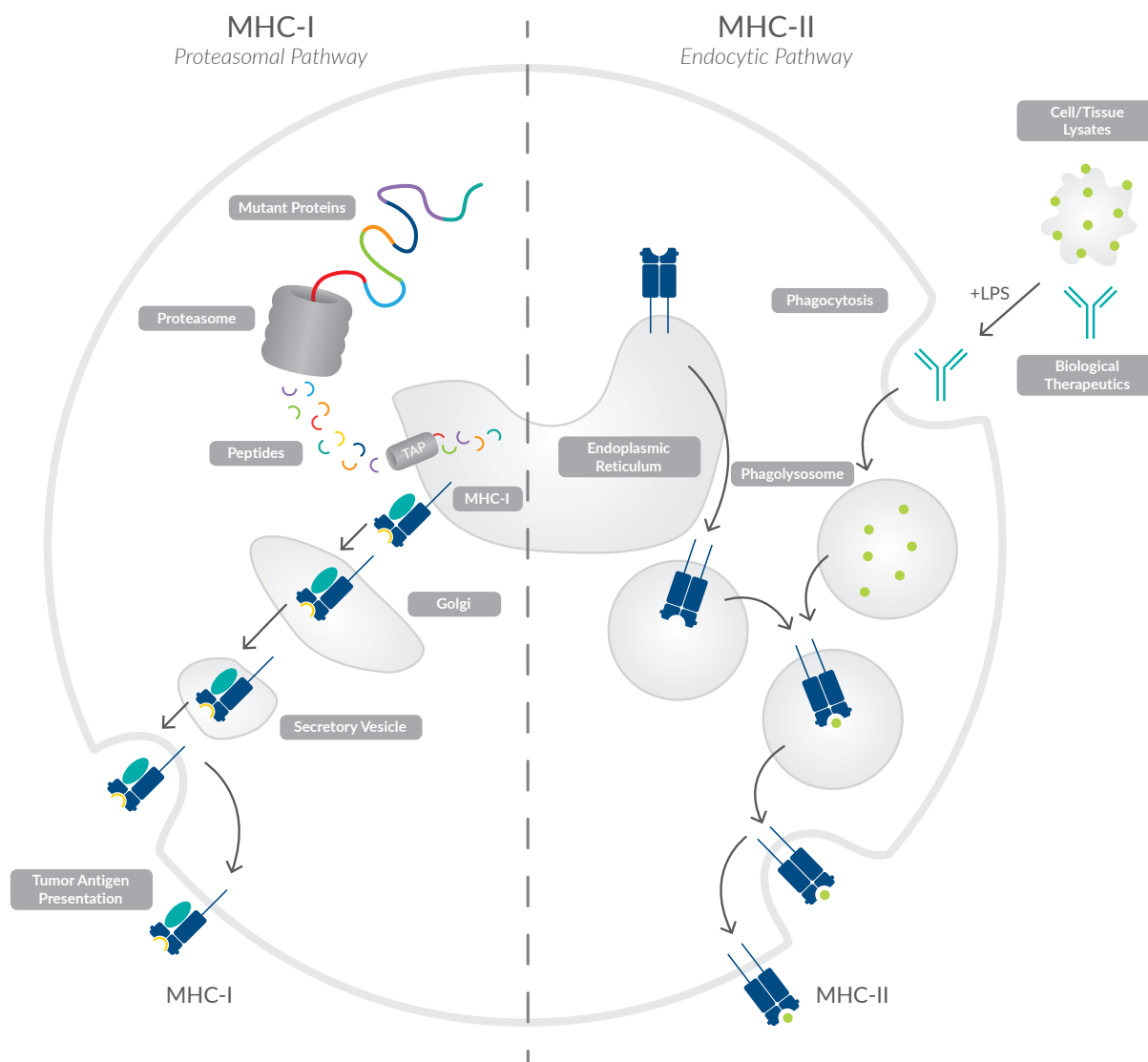
- Identification of thousands of MHC-associated peptides
- Optimized workflows for MHC class I and II (human or mouse), pan-MHC or allele-specific
- Large-scale cell culture and transfection capabilities to suit your unique study
- Workflows adaptable to cells or tumor tissue
- Analysis using Orbitrap MS and unbiased, deep sequencing of the MHC peptidome
- Customized antibody production, cell culture, and bioanalysis services can be tailored to your specific project needs

Workflow for Immunopeptidome Profiling

MHC class I   MHC class II

CELLS OR TISSUE → LYSIS → MHC IP → PEPTIDE ELUTION → ORBITRAP LC-MS/MS (m/z) → DATA ANALYSIS → MHC Peptides

Meet the Expert in Immunopeptidome Profiling
at **www.caymanchem.com/immunopeptidome-expert**

in partnership with

MS Bioworks
Protein Mass Spectrometry Services

MHC Class I and MHC Class II Neoantigen Discovery

MHC-I
Proteasomal Pathway

MHC-II
Endocytic Pathway

Mutant Proteins

Proteasome

Peptides

TAP

MHC-I

Endoplasmic Reticulum

Golgi

Secretory Vesicle

Tumor Antigen Presentation

MHC-I

Cell/Tissue Lysates

Phagocytosis

+LPS

Biological Therapeutics

Phagolysosome

MHC-II

Example Applications

Neoantigen ID

Genetic mutations in cancer cells can give rise to novel peptide sequences (neoantigens) that can be presented via the MHC-I pathway and potentially recognized by the immune system as foreign. Profiling (IDing) the immunopeptidome of established tumor cell lines or tumor tissue holds potential for the development of personalized antitumor immunotherapies designed to stimulate a patient's immune response to neoantigen-derived epitopes.

Immunogenicity Testing (MAPPs)

MHC class II associated peptide proteomics (MAPPs) is growing in importance in the development of biological therapeutics, as long-term treatment with such drugs frequently leads to immune-mediated drug neutralization and reduced efficacy. Cayman has optimized methods to enhance uptake of biologics by antigen-presenting cells, improving efficiency in identifying potentially immunogenic epitopes in allele-specific patient subsets.

Visit **www.caymanchem.com/immunopeptidome**
for more information or to request a quote