Bio-Rad is the trusted veterinary antibody producer and the supplier of choice to healthcare, commercial, academic and government organizations at the cutting-edge of breakthrough science. Bio-Rad is globally recognized as being at the forefront of veterinary antibody manufacturing, with a reputation for product excellence and unrivalled customer support built up over 30 years.

Achieving the eradication of bovine tuberculosis is one of the key objectives of bovine research and also a main focus of many government veterinary health programs. While conventional herd management techniques play a key role, basic and applied research in bovine adaptive and innate immunology is crucial for the development of vaccine and measuring correlates of protection for bovine tuberculosis and other infectious diseases.

To conduct research in this area, Bio-Rad supplies antibodies to investigate adaptive and innate immune cells and key cytokines.

The diagnosis of lymphoid leukemia and lymphomas in dogs is aided by flow cytometry analysis. Our multicolor flow panels support experiments to assay canine T cells and are complemented by a comprehensive range of conjugated antibodies for staining T and B cells and cells of the innate immune compartment.

Pigs have played a major role in translational research for many years, mainly in the areas of medical device development, therapeutics and xenotransplantation. The completion of the pig genome has led to development of genetically modified pigs to study cystic fibrosis.

Antibodies specific for markers of T, B and dendritic cells, and monocytes and macrophages are available to profile pig immune cell populations. Immune response studies are supported by anti-cytokine antibodies validated for ELISA.

While birds and mammals both have innate and adaptive components to their immune systems, with cell mediated and humoral responses, there are differences in the organs, cells, and effector molecules responsible for immune defense. As well as being a scientifically interesting model organism with a less complex immune system than mammals, avian health and wellbeing is very important to the security of food production and public health.

Bio-Rad supplies antibodies to stain adaptive and innate immune cells and measure key cytokines in chicken and other avian species.

New Application Resources

No Experiment is Complete Without All the Pieces

Complete yours at bio-rad-antibodies.com/applications
Does your research require dendritic cells? The bovine dendritic cell growth kits can save you the time and effort of developing your own method and optimizing the individual reagents. The kit uses biologically active recombinant Interleukin-4 (IL-4) and Granulocyte Macrophage-Colony Stimulating Factor (GM-CSF), supplied as a premixed liquid at optimal concentrations to induce dendritic cell development from PBMC after isolation with CD14.

Dendritic cells can be identified using cell surface phenotyping by demonstrating a high level of MHC Class II or co-stimulatory molecules such as CD80 or CD86, and the absence of lineage markers, such as CD3 (T cell), CD14 (monocyte), CD19 (B cell), CD56 (Natural Killer cell) and CD66b (granulocyte).

Measurement of IFN gamma is a key readout of the bovine immune response. IFN gamma is a secreted, pro-inflammatory cytokine, produced by lymphocytes in response to activation by specific antigens or mitogens. It plays a critical part in immune and inflammatory responses, and has been identified as a potential therapeutic agent and marker for autoimmune and infectious diseases. Its measurement in cattle is particularly significant in relation to testing for bovine tuberculosis. ELISA validated antibody pairs for IL-4, IL-10 and TNF alpha are available to complement the IFN gamma kit.
Canine Flow Cytometry Panel Kits

- Canine dual and triple specificity antibody kits allow rapid profiling of canine T lymphocytes
- The antibody cocktails are supplied pre-mixed in optimized ratios for added convenience

Clone CA17.2A12 recognizes canine CD3, which is a pan T lymphocyte marker. Clone YKIX302.9 recognizes canine CD4, which is expressed by T helper cell subset. Clone YCATE55.9 recognizes CD8 alpha, which is expressed by cytotoxic T cells.

![Canine CD3 positive cells from peripheral blood analyzed for CD4 and CD8 staining using anti-dog CD3:FITC/CD4:PE/CD8:Alexa Fluor®647 (TC014)](image)

<table>
<thead>
<tr>
<th>Specificity</th>
<th>Catalog Number</th>
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<tbody>
<tr>
<td>CD3:FITC/CD4:PE/CD8:Alexa Fluor® 647</td>
<td>TC014</td>
</tr>
<tr>
<td>CD3:FITC/CD4:RPE</td>
<td>DC046</td>
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<tr>
<td>CD3:FITC/CD8:RPE</td>
<td>DC047</td>
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<tr>
<td>CD4:FITC/CD8:RPE</td>
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</tbody>
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**Canine Multi Color Flow Cytometry**

Staining with combinations of antibodies, it is possible to identify lymphocytes, monocytes, granulocytes, T cells, T cell subsets, and B cells in dogs.

This analysis employs the anti-canine CD3 FITC (MCA1774F), CD21 PE (MCA1781PE), CD4 PE/Cy7 (MCA1038PECy7), CD8 AF647 (MCA1039AF647) antibodies and the human cross-reactive antibodies HLADR PE/Cy5 (MCA2812C) and CD14 AF647 (MCA1568AF647).

**Chicken Leukocytes**

Chickens have unique aspects to their immune system and differ from other model organisms such as rodents.

To further research in the avian immune system, Bio-Rad supplies antibodies to study the key chicken immune cell populations.

- T cells: CD3, CD4, CD8a, CD25, and CD28
- B cells: BU-1a and CD79

Macrophage and dendritic cell research: CD14, CD86, MHC Class II

**Porcine Leukocytes**

Porcine immune cells can be analyzed with antibodies available from Bio-Rad.

The key T cell populations can be stained with antibodies to porcine CD3, CD4a, and CD8a. B cells can be revealed using the anti-CD5 and CD79 antibodies.

Dendritic cells can be assayed with antibodies specific for CD163 and CD172a (SIRP-alpha); monocytes and macrophages can be stained for using anti-CD11R3, -CD14, and -CD16.

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