MONOCLONAL ANTIBODIES CORE UNIT

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OVERVIEW

The application of hybridoma technology for the production of monoclonal antibodies (mAbs) represents one of the most relevant methodological advances in biomedicine of the past decades. The availability of monoclonal antibodies has significantly improved our knowledge about the processes involved in tumour generation and development, opening up a vast array of new possibilities for basic and applied research.

The Monoclonal Antibodies Unit provides CNIO Research Groups with an 'à la carte' generation of mAbs. We are highly specialised in the production of mouse and rat monoclonal antibodies. The Unit also offers mAb characterisation and validation, medium-scale mAb production, as well as a service of *Mycoplasma* testing for the cell culture facility.

"The Monoclonal Antibodies Unit is highly specialised in mAbs production and characterisation, providing CNIO researchers with reliable and well-validated reagents that give added value to their research projects."

RESEARCH HIGHLIGHTS

During the last 18 years, the Monoclonal Antibodies Unit has generated a large number of mAbs, against more than 140 different antigens, mostly targeting molecules for which mAbs are not commercially available. Many of those mAbs have been licensed to external companies, generating royalties that represent an important source of revenue for the CNIO.

Each year, we prepare and update a detailed CNIO mAbs catalogue, which contains the datasheets of more than 90 thoroughly validated high-quality mAbs (accessible at http://www.cnio.es/ing/servicios/anticuerpos/default.aspx).

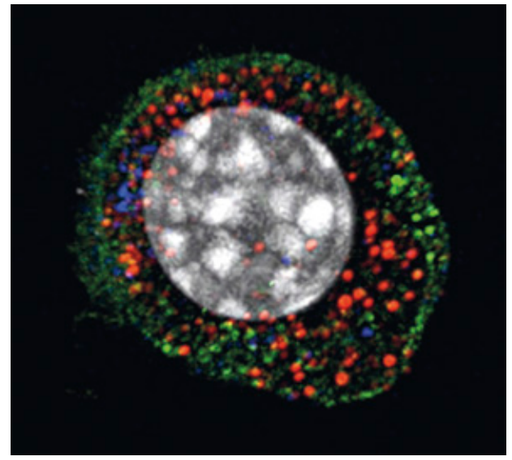

Figure The confocal image shows the colocalisation of Ly9 (green) and Clathrin (red) proteins in the myeloma cell line U266.

Research activities

In collaboration with Prof. Pablo Engel from the University of Barcelona, we have produced and characterised a new monoclonal antibody against the protein T-lymphocyte surface antigen Ly-9. Ly9, also known as CD229 or SLAMF3, is one of the 9 members of the immunoglobulin superfamily (SLAM). It is expressed in T and B-lymphocytes and plays an important role in lymphocyte activation and cytotoxicity.

We have investigated the expression of the Ly9 protein in normal and neoplastic lymphoid tissue using a novel rat monoclonal antibody (PIZCU426A) against the Ly9 intracellular domain; this novel mAb recognises its target in paraffin-embedded tissue sections. A large series of normal tissues and B and T-cell lymphomas have been studied using whole sections and tissue microarrays.

In human reactive tissues, we found that Ly9 is restricted to lymphoid tissue, specifically to mature B and T cells. Ly9 was strongly expressed in all cases of myelomas, marginal zone and MALT lymphomas. This new monoclonal antibody may help pathologists in the identification of neoplastic B and T cells in routinely processed tissue samples, and may be used to achieve a better understanding of the pathogenic role of Ly9 in inflammatory and malignant diseases.

EuroMAbNet, a European consortium of experts in monoclonal antibody technology

In 2008, in collaboration with Oxford University, we founded EuroMAbNet (www.euromabnet.com), a non-profit organisation that currently spans 11 European countries. Members include internationally distinguished academic laboratories that generate and validate monoclonal antibodies. EuroMAbNet is strongly committed to improving the education and training of junior scientists in the field of antibody validation. This aim is materialised through the organisation of annual Antibody Validation Workshops in different venues across Europe.

The final goal of EuroMAbNet is to strengthen European leadership in mAb technology, improve education in the field on an international level, and actively engage with industrial partners to ensure the optimum benefits from using mAb technology to improve human health. ■

PUBLICATIONS

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- Manso R, González-Rincón J, Rodríguez-Justo M, Roncador G, Gómez S, Sánchez-Beato M, Piris MA, Rodríguez-Pinilla SM (2018). Overlap at the molecular and immunohistochemical levels between angioimmunoblastic T-cell lymphoma and a subgroup of peripheral T-cell lymphomas without specific morphological features. *Oncotarget* 9, 16124-16133.
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