The AJ514 antibody recognizes the common antigen 1 from Dictyostelium discoideum by immunofluorescence

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Abstract

The AJ514 antibody, derived from the 221-342-5 hybridoma, detects by immunofluorescence the common antigen 1 from *Dictyostelium discoideum*.

Introduction

The common antigen 1 (CA1) is a mannose-6-SO_4-carbohydrate epitope shared by lysosomal enzymes of *Dictyostelium discoideum*, recognized by the 221-342-5 monoclonal antibody (Knecht *et al*., 1984; Neuhaus *et al*., 1998). Here we describe the ability of the AJ514 antibody, a single chain fragment (scFv) derived from the 221-342-5 hybridoma, to label lysosomal compartments by immunofluorescence.

Materials & Methods

Antibodies: ABCD_AJ514 antibody (ABCD nomenclature, web.expasy.org/abcd/) was produced by the Geneva Antibody Facility (www.unige.ch/medecine/antibodies/) as mini-antibody with the antigen-binding scFv fused to a rabbit IgG Fc. The synthesized scFv sequence (GeneArt, Invitrogen) corresponds to the sequence of the variable regions joined by a peptide linker $(GGGGS)_3$. The sequencing of the 221-342-5 hybridoma was performed by the Geneva Antibody Facility. HEK293 suspension cells (growing in FreeStyle™ 293 Expression Medium, Gibco #12338) were transiently transfected with the vector coding for the scFv-Fc. Supernatants (~50 mg/L) were collected after 5 days.

Antigen: $5x10^5$ *D. discoideum* DH1 cells, sedimented on a 22x22 mm glass coverslip (Menzel-Gläser) for 90 minutes at room temperature in HL5 medium, were used.

Protocol: Cells were fixed with HL5 + 4% paraformaldehyde (w/v) (Applichem, #A3013) for 30 min, and blocked with PBS + 40 mM ammonium chloride (NH_4Cl) (Applichem, #A3661) for 5 min. Cells were then permeabilized in methanol at -20 °C for 2 min, washed once (5 min) with PBS, and once (15 min) with PBS + 0.2% (w/v) BSA (PBS-BSA). Cells were then incubated for 30 min with the original mouse hybridoma 221-342-5 supernatant (dilution 1:3 in PBS-BSA) and with the reformatted scFv antibody (dilution 1:10 in PBS-BSA). After 3 washes (5, 5, 15 min) with PBS-BSA, cells were incubated for 30 min with secondary goat anti-mouse IgG conjugated to AlexaFluor-488 (hybridoma) and goat anti-rabbit IgG conjugated to AlexaFluor-647 (scFv) (1:300, Molecular Probes #A11029 and #A21245, respectively). After 3 washes (5, 5, 15 min) with PBS-BSA and one wash (5 min) with PBS, coverslips were mounted on slides (Menzel-Gläser, 76x26 mm) with Möwiol (Hoechst) + 2.5% (w/v) DABCO (Fluka, #33480). Pictures were taken using a Zeiss LSM700 confocal microscope, with a 63x Neofluar oil immersion objective.

Results

In agreement with the original description of the 221-342-5 hybridoma antibody (Neuhaus *et al*., 1998), the AJ514 antibody labels intracellular organelles containing lysosomal enzymes exhibiting sulfated carbohydrates (Fig. 1). The staining with both antibodies appears almost indistinguishable (Fig. 1).

References

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Conflict of interest

The authors declare no conflict of interest.

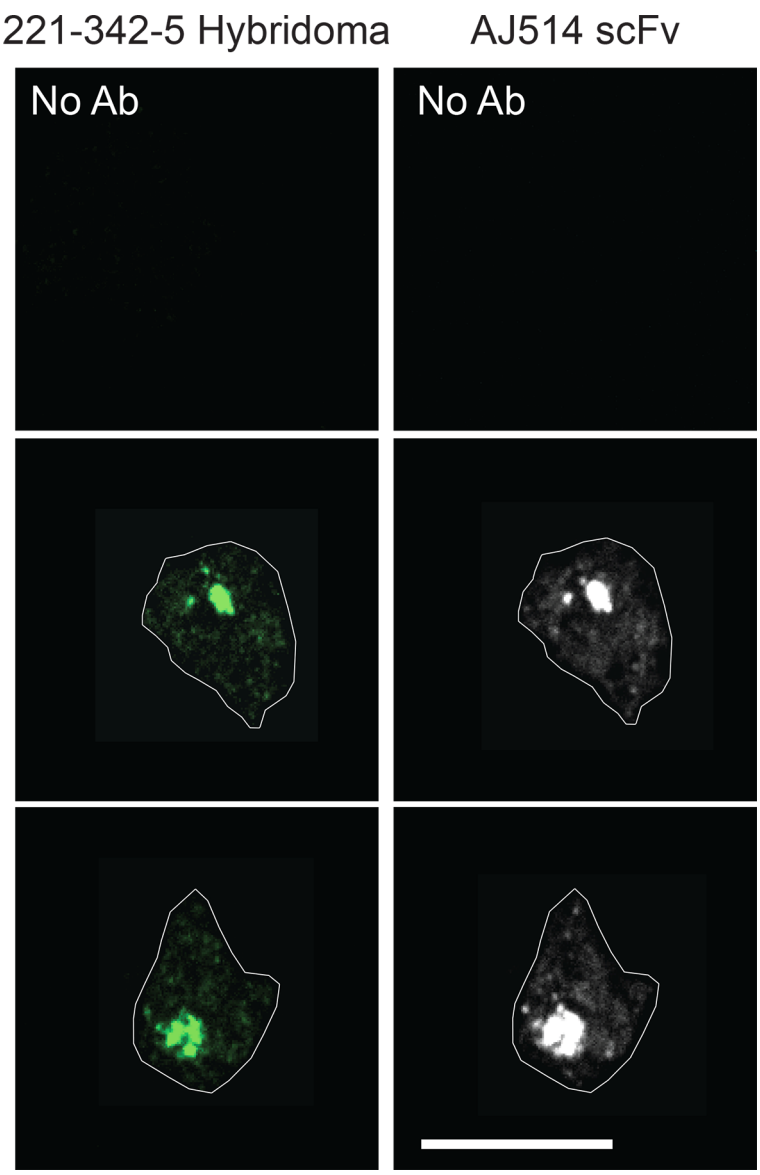

Fig. 1. The 221-342-5 hybridoma and the AJ514 antibody label lysosomal compartments in *Dictyostelium* cells. A double fluorescence staining with both antibodies was performed. No labelling was seen when the primary antibodies were omitted (No Ab). Scale bar: 10 µm.