ABSTRACT OF THE DISCLOSURE

The invention intends to provide a cell culture apparatus which is able to realize an adequate culture according to the culture state of cells while alleviating the labor of an operator. The cell culture apparatus includes a culture bag for causing the cells to proliferate, a cell inoculation cassette (or culture bag as an antibody stimulating and proliferation culture vessel) for stimulating the cells by an inducer for the proliferation, a culture medium cassette for storing a culture medium supplied to the culture bag and the cell inoculation cassette, a CCD camera 88 for acquiring images of the cells in the cell inoculation cassette, and an image processing computer and an operation control computer for determining the culture state (proliferation capability and proliferation ability of the cells) of the cells from the images of the cells acquired by the CCD camera, and causing a culture operation to be carried out on the basis of the determination.