fluorescent pigment, can then be bonded on the antibodies of the patient in turn after carrying out a further incubation step.

Immunofluorescence images obtained in this manner can then be the subject matter of a clinical finding.

Devices are known in particular, for example, microscopes, in which a user can manually perform an alignment of the sample in relation to the microscope or the objective lens of the microscope to make visible in the obtained immunofluorescence image a defined region or a defined detail of the sample.

Embodiments of the present invention seek to provide a device and a method for a user, in the case of which an acquisition of immunofluorescence images on different details or regions of a sample is made as simple as possible for a user and able to be handled and/or operated well and carried out reliably.

According to a first aspect of the present invention, there is provided a method for acquiring and displaying an immunofluorescence image of a biological sample,

comprising in a first operating state

- continuously illuminating the sample using excitation radiation,
- changing a relative position between the sample and an optical system, which guides fluorescent radiation emitted by the sample onto at least one image sensor, in dependence on a movement gesture of a user,
- acquiring the fluorescent radiation by means of multiple sensor pixels of the at least one image sensor using a first acquisition duration and determining a digital image, and
- displaying the digital image,

wherein in the first operating state, the acquisition of the fluorescent radiation as well as the determination and the display of the digital image are repeated at successive points in time at a defined repetition frequency,

wherein furthermore upon detection of a termination of the movement gesture, a change is made from the first operating state to a second operating state,

furthermore comprising in a second operating state

- illuminating the sample using the excitation radiation,
- acquiring fluorescent radiation emitted by the sample by means of the multiple sensor pixels using a second acquisition duration and determining a further digital image,
- displaying the further digital image,
- terminating the acquisition of the emitted fluorescent radiation and terminating the illumination of the sample after lapse of the second acquisition duration,
- continuously displaying the further digital image after the termination of the acquisition of the fluorescent radiation and the termination of the illumination of the sample.

According to a second aspect of the present invention, there is provided a device for acquiring and displaying an immunofluorescence image of a biological sample,

comprising

- an excitation light source for illuminating the sample using excitation radiation,
- a holding device for holding the sample,
- at least one image sensor having multiple sensor pixels for acquiring fluorescent radiation emitted by the sample,
- an optical system for guiding the fluorescent radiation from the sample onto the image sensor,
- a positioning unit, which is designed to change a relative position between the sample and an optical system,
- at least one control unit having a first interface to a user input device, a second interface to the image sensor, a third interface to the excitation light source, a fourth interface to the positioning unit, and a fifth interface to a display unit,

wherein the control unit is designed, in a first operating state

- to control the excitation light source in such a way that the sample is continuously illuminated using the excitation radiation ,
- furthermore to derive a movement gesture of the user from an input signal of the user input device and to control the positioning unit in such a way that the relative position between the sample and the optical system is changed in dependence on the movement gesture,

- to control the image sensor in such a way that, by means of the multiple sensor pixels, the fluorescent radiation is acquired using a first acquisition duration and furthermore to determine a digital image from resulting sensor pixel values and also furthermore
- to control the display unit to display the digital image,

wherein the control unit is furthermore designed, in the first operating state

- to repeat the acquisition of the fluorescent radiation as well as the determination and the display of the digital image at successive points in time using a defined repetition frequency
- and upon detection of a termination of the movement gesture, to change to a second operating state,

wherein the control unit is furthermore designed, in the second operating state

- to control the image sensor so that by means of the multiple sensor pixels, the fluorescent radiation is acquired using a second acquisition duration and furthermore to determine a further digital image from resulting sensor pixel values, and to control the display unit to display the further digital image,
- and furthermore to control the image sensor so that after lapse of the second acquisition duration, the acquisition of the fluorescent radiation is terminated, and also furthermore to control the excitation light source in such a way that the illumination of the sample is terminated after lapse of the second acquisition duration,
- and finally furthermore to control the display unit after the termination of the illumination of the sample and after the termination of the acquisition of the emitted fluorescent radiation in such a way that the further digital image is continuously displayed.

A method is proposed for acquiring and displaying an immunofluorescence image of a biological sample. In a first operating state, the method carries out defined method steps. During the first operating state, the sample is continuously illuminated using the excitation light. In this way, in particular a continuous emission of the fluorescent radiation by the sample is generated. A relative position between the sample and an optical system, which guides fluorescent radiation emitted by the sample onto at least one image sensor, is changed in dependence on a movement gesture of a user. In this way, in particular the user can determine by movement gestures which detail of the sample is made visible by means of the optical system and the image sensor in the immunofluorescence image. During the first operating state, the fluorescent radiation is acquired by means of multiple sensor pixels of at least one image sensor using a first acquisition duration. A digital image is then determined on the basis of the resulting sensor pixel values of the sensor pixels and this digital image is displayed.

In the first operating state, the acquisition of the fluorescent radiation as well as the determination and the display of the digital image are repeated at successive points in time at a defined repetition frequency. In this way, in particular in the case in which a movement gesture is carried out continuously, different details or regions of the sample are thus in each case acquired in the immunofluorescence image and displayed in the digital image at the respective corresponding, successive points in time. The user can thus determine in particular by carrying out the movement gesture which detail of the sample is represented