

# TILL.TIRF

Total Internal Reflection Fluorescence

combining

- the flexibility and sensitivity of prism-based TIRF,
- the convenience of an objective-based system, and
- the multispectral capabilities you expect from TILL

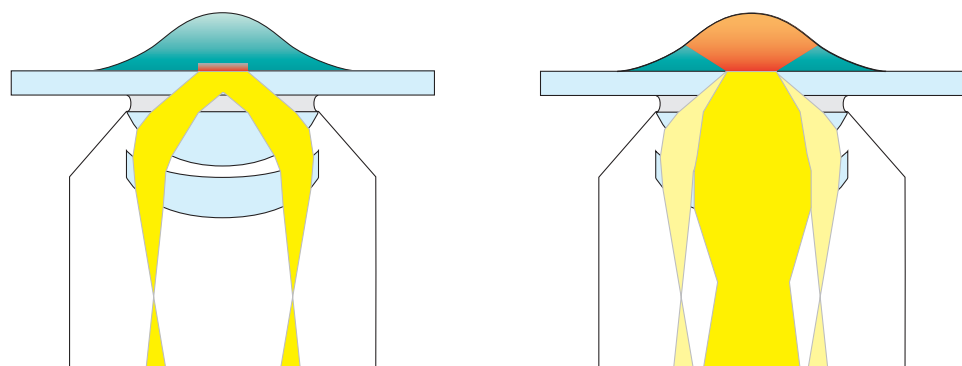
with

- polychromatic widefield epi-illumination and
- the real-time performance of TILL imaging

into a turn-key system for the study of

- membrane-associated processes in living cells
- biological and chemical reactions at liquid-solid interfaces
- single molecule dynamics

with easy alignment and inherent laser safety



by confining fluorescence excitation to a very thin excitation volume near a glass-water interface, where total internal reflection occurs,

**TILL.TIRF provides super-resolution in z-direction**

since fluorescently labeled structures and reporter molecules within the range of the evanescent field may be discriminated against a high background of other fluorescence outside,

**TILL.TIRF provides maximal signal-to-noise ratio**

moreover, since the extent of the evanescent field depends on both wavelength and angle of the incidence,

**TILL.TIRF provides user controllable penetration depth**

flexibility

sensitivity

stability

multicolor

real-time

turn-key

easy alignment

inherent laser safety

z-direction super resolution

controllable penetration depth

versaTILL

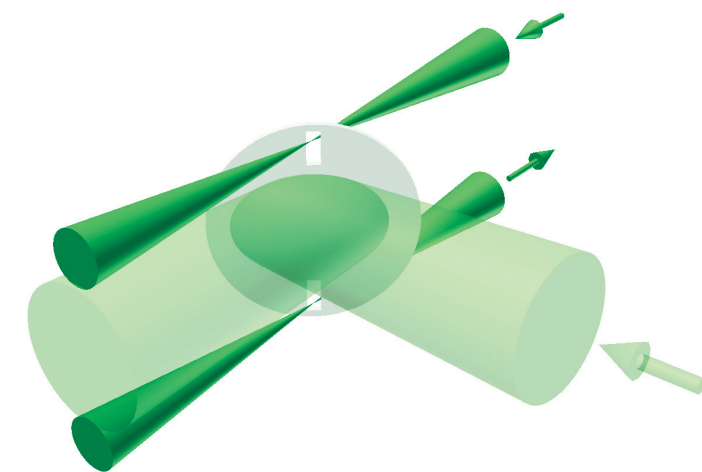
# TILL.TIRF

Total Internal Reflection Fluorescence

combines the evanescent field and widefield epifluorescence illumination in a simultaneous or rapidly sequential manner

The novel optical design (patents pending) merges the two beams without sacrificing illumination efficiency and freedom of wavelength choice. This merging occurs where the beams do not overlap, i.e. at a plane conjugate to the back focal plane of the objective lens.

As an inherent laser safety measure, the beam-merging design ensures that laser light passes only at "safe positions", where total internal reflection occurs and hence no laser light can escape from the sample.



As an extra safety measure one can compare the intensity of the ingoing and the outgoing laser beam. Equal intensities mean safe operation, while an intensity imbalance implies that the overall intensity should be reduced to safe levels for realignment before it can be increased again.

**Please ask for the TILL laser safety package!**

The beams are conveyed to the TIRF condenser via flexible quartz fibers. Both light paths can deliver light of different wavelengths. For widefield epifluorescence we recommend the TILL Polychrome illumination unit, for laser illumination we refer you to

**the TILL multicolor laser combiner unit**

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