The present invention relates to a sampling device suitable for in vivo sampling of liquid(s) from the gastro-intestinal tract, comprising a body, the body comprising a channel and an opening for entrance of the liquid(s) at one end of the channel, and a cover bonded to at least part of the body and arranged such that the channel in the body is at least partially covered by the cover, the channel having a length of 2 mm-25 m and a perimeter of 2.4-8600 μm, the channel further comprising one or more side compartments, and the channel with the optional one or more side compartments having a volume of 5 nl-4500 μl.