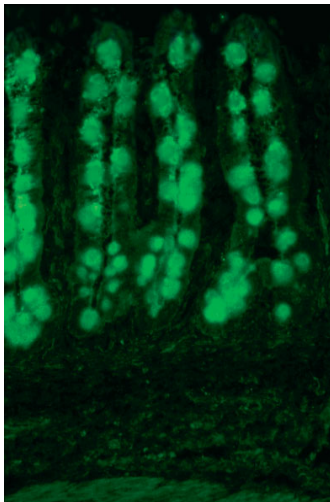
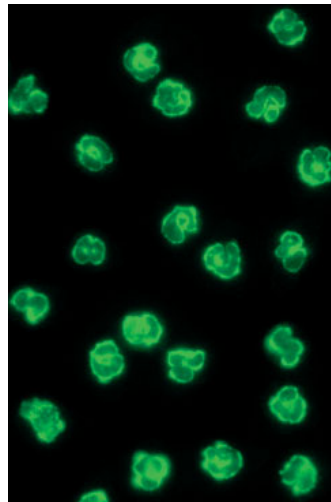




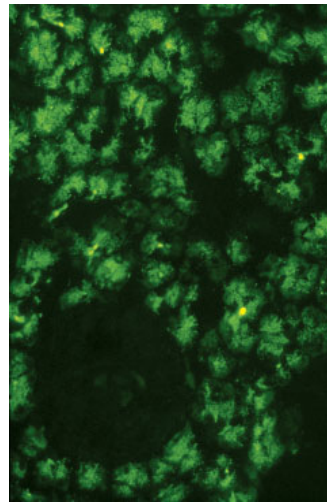
Autoantibodies in ulcerative colitis and Crohn's disease



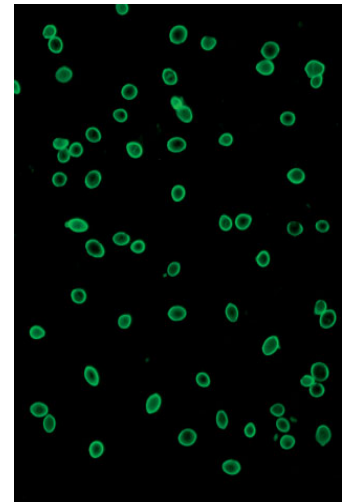
Autoantibodies against intestinal goblet cells



Human ethanol-fixed granulocytes: pANCA



Autoantibodies against exocrine pancreas



Antibodies against Saccharomyces cerevisiae

Four fifths of all patients with chronic inflammatory bowel disease can be diagnosed by serological investigations alone, with no prior knowledge of the clinical findings, through the determination of antibodies to intestinal goblet cells and granulocytes (ulcerative colitis) and to exocrine pancreas and *Saccharomyces cerevisiae* (Crohn's disease).

Antibodies to intestinal goblet cells were discovered more than 40 years ago¹. These are pathogenomic markers for **ulcerative colitis**, but have a prevalence of only 28%². Antibodies to goblet cells are investigated by indirect immunofluorescence. If the result is positive, a woolly fluorescence of the goblet cells with an indistinct boundary is seen. The test substrate of choice is foetal primate intestine tissue - this has not yet been exposed to bacteria or exogenous antigens and as a result shows little unspecific background fluorescence. Contrary to the recommendation of some authors, rodent tissue is totally unsuitable.

Antibodies against granulocytes (pANCA) are not only significant in the serological diagnosis of various forms of vasculitis, but also in the differential diagnosis of chronic inflammatory bowel disease. pANCA occurs in 67% of patients with **ulcerative colitis**, was first described in this disease in 1987³, but not yet identified: this was achieved by Saxon et al. three years later⁴. But pANCA can also occur in Crohn's disease (7%), which confirms the suspicion that 10% of patients are afflicted with both diseases, but only one of them is clinically manifest. Ethanol-fixed smears of human granulocytes are the ideal substrate for the determination of these antibodies by indirect immunofluorescence. Half of the sera show a smooth, and the other half a fine-speckled perinuclear fluorescence.

At the time of the study in 2004 the target antigen of pANCA in ulcerative colitis had not yet been clearly identified. Antibodies against intestinal goblet cells do not correlate with pANCA⁵, and 83% of ulcerative colitis cases can be detected by investigating both antibodies.

Antibodies against	Ulcerative colitis	Crohn's disease	Blood donors	only IgA	only IgG	only & IgG
Goblet cells (GAb)	28%	0%	0%	8%	23%	69%
Granulocytes (pANCA)	67%	7%	1%	3%	39%	58%
Exocrine pancreas (PAb)	2%	39%	0%	9%	36%	55%
<i>S. cerevisiae</i> (ASCA)	2%	67%	2%	31%	14%	55%

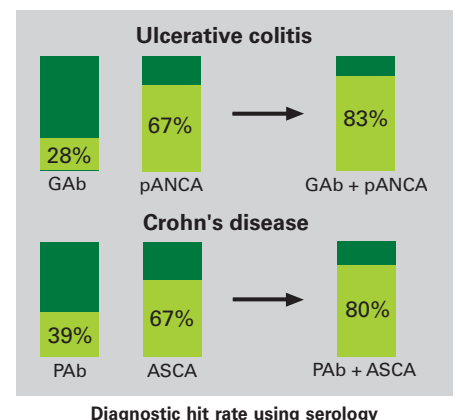
For **Crohn's disease**, **autoantibodies against exocrine pancreas** (acinus cells) are a reliable diagnostic marker^{2,3}. They are investigated by indirect immunofluorescence on primate pancreas and show a reticular to granular, sometimes also a droplet-like fluorescence. Their prevalence is 39% and titres of 1:32 or higher are significant, this being pathogenomic for Crohn's disease.

Moreover, **antibodies against *Saccharomyces cerevisiae*** are found in the serum of 67% of patients with Crohn's disease⁶. These antibodies are only rarely observed in ulcerative colitis and the standard diagnostic method is also indirect immunofluorescence. By measuring these together with antibodies against exocrine pancreas, a hit rate of 80% is achieved for Crohn's disease.

With regard to their organ specificity, disease association and frequently high serum concentrations, the significance of pancreas and goblet cell antibodies is comparable with that of other autoantibodies in confirmed autoimmune diseases. Both antibodies are probably indicative of a **pathogenetically significant autoimmunity**⁷, which in the case of ulcerative colitis is directed against intestinal goblet cells, and in Crohn's disease against a secretion product of the pancreas. The histological distribution of goblet cells corresponds exactly with the clinical localisation of ulcerative colitis (few goblet cells in the duodenum, many in the rectum and a massive presence in the crypts of the colon - cryptitis).

For the simultaneous determination of these four antibodies by indirect immunofluorescence, a

BIOCHIP Mosaic™ is used consisting of the **four substrates** primate intestine, ethanol-fixed human granulocytes, primate pancreas and *Saccharomyces cerevisiae*. This BIOCHIP Mosaic should ideally be incubated with serum dilutions 1:10 and 1:100. FITC-labelled anti-human IgA and IgG should be used in parallel as secondary antibodies.



References: 1. Broberger, O., Perlmann, P. J Exp Med 110 (1959), 657-74. 2. Stöcker, W. et al. Dtsch Med Wschr 109 (1984), 1963-1969. 3. Stöcker, W. et al. Scand J Gastroenterol 22 Suppl 139 (1987), 41-52. 4. Saxon, A. et al. J Allergy Clin Immunol 86 (1990), 202-210. 5. Stöcker, W. et al. Immunobiol 186 (1992), 96. 6. Main, J. et al. BMJ 297 (1988), 1105-1106. 7. Stöcker, W. et al. Dtsch Med Wschr 109 (1984), 1984-1986.