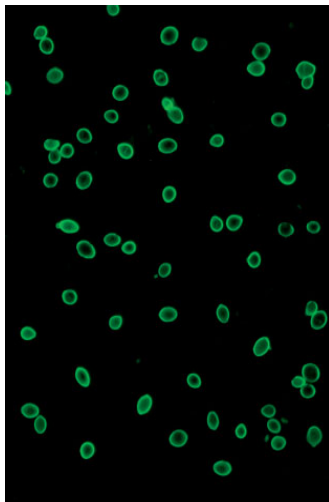
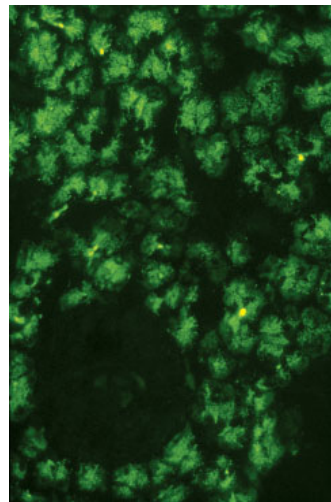




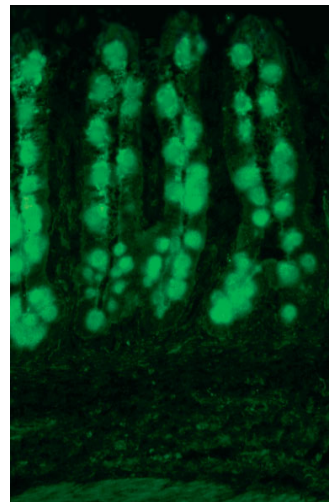
Relevance of Antibodies against *Saccharomyces cerevisiae* for the Diagnosis of Chronic Inflammatory Bowel Diseases



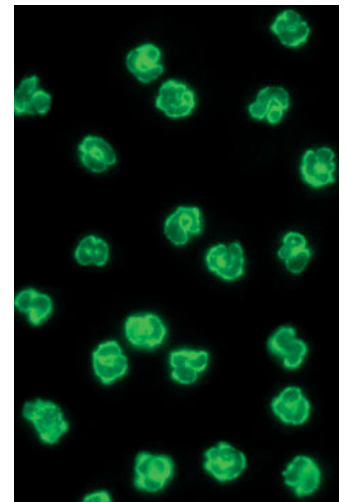
Antibodies against *Saccharomyces cerevisiae*



Autoantibodies against exocrine pancreas



Autoantibodies against intestinal goblet cells



Human ethanol-fixed granulocytes: pANCA

Antibodies against microorganisms of the intestinal flora are found more frequently in patients with Crohn's disease than in healthy individuals. This probably reflects the increased immunoreactivity of the compromised intestine.

Main et al. observed in 1988 that **antibodies against *Saccharomyces cerevisiae*** are frequently found in the serum of patients suffering from Crohn's disease. They enrich the serological diagnosis of chronic inflammatory bowel disease by a further parameter, adding to autoantibodies against exocrine pancreas (specific for Crohn's disease), intestinal goblet cells (pathognomonic of ulcerative colitis), and granulocytes (pANCA). The standard method for determining these antibodies is the indirect immunofluorescence test.

Antibodies against *Saccharomyces cerevisiae* were investigated separately for the immunoglobulin classes IgA, IgG, and IgM. For IgA and IgM, a serum dilution of 1:100 proved to be suitable, whereas for IgG a dilution of 1:1000 was necessary to obtain sufficient specificity. The following prevalences were calculated for different serum cohorts:

Prevalence	n	IgA pos.	IgG pos.	IgA or IgG pos.	IgM pos.
Crohn's disease	67	67 %	64 %	70 %	26 %
Ulcerative colitis	47	2 %	2 %	4 %	13 %
Blood donors	50	2 %	6 %	8 %	2 %

Antibodies against *Saccharomyces cerevisiae*

Autoantibodies against exocrine pancreas provide a much higher specificity for Crohn's disease. Their prevalence in this disease amounts to 39% (ulcerative colitis 2%; healthy blood donors 0%). Significant titres of 1:32 or higher indicate Crohn's disease (IgA 9%, IgA + IgG 55%, IgG 36%).

Autoantibodies against intestinal goblet cells are found exclusively in ulcerative colitis, although only in 28% of patients (IgA 8%, IgA + IgG 69%, IgG 23%).

Autoantibodies against granulocytes (pANCA) also occur in ulcerative colitis (67%), but frequently in Crohn's disease as well (7%; these cases are probably caused by the simultaneous presence of both diseases in 10% of patients).

Unlike antibodies against *Saccharomyces cerevisiae* and granulocytes, pancreas and goblet cell antibodies show a level of significance comparable with that of other autoantibodies in confirmed autoimmune diseases in terms of organ specificity, disease association and their frequently high serum concentrations.

Both antibodies probably indicate a pathogenetically relevant autoimmunity, which in the case of Crohn's disease is directed against a secretion product of the pancreas and in the case of ulcerative colitis against intestinal goblet cells.

pANCA do not correlate with antibodies against intestinal goblet cells, nor do an-

tibodies against *Saccharomyces cerevisiae* correlate with pancreas antibodies. Therefore, the investigation of goblet cell antibodies in ulcerative colitis supplements the detection of pANCA and increases the chance of diagnosing ulcerative colitis serologically from 28% to 83%. In the same way, the determination of antibodies against *Saccharomyces cerevisiae* in addition to pancreas antibodies significantly increases the success rate for the serological diagnosis of Crohn's disease (80% compared to 39% for detection of pancreas antibodies only).

For the simultaneous determination of these four antibodies by indirect immunofluorescence, a BIOCHIP Mosaic™ consisting of the following substrates is used: primate pancreas, primate intestine, ethanol-fixed human granulocytes, and *Saccharomyces cerevisiae*.

Ideally this BIOCHIP Mosaic is incubated with the serum dilutions 1:10, 1:100, and 1:1000. FITC-labelled anti-human IgA and IgG should be used in parallel as secondary antibodies. In this way, all relevant antibodies are reliably detected, and, for positive cases, the titre is already obtained after the first test run.

References: 1. Main, J. et al. *BMJ* 297 (1988), 1105-6. 2. Stöcker, W. et al. *Scand J Gastroenterol* 22 Suppl. 139 (1987), 41-52. 3. Broberger, O. Perlmann, P., *J Exp Med* 110 (1959), 657-74. 4. Stöcker, W. et al. *Immunobiol* 186 (1992), 96.