**Immundiagnostik continues to focus on quality products and custom-tailored services in 2010**

In the previous year our company has been successful despite the global crisis. We see this development as a reward of our strategy to offer premium products for routine and research in laboratory diagnostics and to combine this portfolio with a custom-tailored service. We focus on the development of an unique product range, which we refine and advance on a continuous basis - in constant exchange with our customers and collaborators. We stick with our key business areas gastroenterology, cardiovascular and renal system, bone metabolism and oxidative stress.

Our goal is to keep on exploring and meeting YOUR needs in immunoassays and immunochemicals. We would like to introduce this newsletter as a tool to fuel the dialogue with our customers, business partners and other interested parties.

We are hence looking forward to your feedback and a continued successful cooperation in 2010!

*Dr. Franz Paul Armbruster, Vorstand*

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**PRODUCT OPTIMIZATION**

**Ideal clinic test: MutaPLATE® Norovirus Kit now available for the SmartCycler**

The MutaPLATE® Norovirus real time RT-PCR kit (TaqMan) is a qualitative test for the specific detection of noroviruses genogroups I & II in faeces. The assay runs on all well-established PCR-microtitre plate systems, e.g. lab automates by Applied Biosystems, Stratagene, Corbett Research (RotorGene) and has now been adapted for Cepheid’s SmartCycler. The rapid and reliable MutaPLATE® Norovirus test is hence especially well suited for the clinical routine and for epidemiological screenings.

→ **MutaPLATE® Norovirus (KV 1934196)**

**More info:**
http://www.immundiagnostik.com/produkte/produkte_testkits.html

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**Reliable diagnosis of seasonal influenza and swine flu with only one RT-PCR**

The MutaPLATE® Influenza A & B (+ H1N1) PCR-kit detects reliably influenza A and B viruses and in addition the H1N1-virus as pathogen of the swine flu. The PCR has been designed for the RotorGene and is therefore also applicable for the Lightcycler 480.

→ **MutaPLATE® Influenza A & B (KE 19004)**

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**MutaREX® and MutaPLEX® Norovirus kits ensure RNA-extraction from faeces**

Has the RNA-extraction been successful? With these new norovirus kits from Immundiagnostik you can be sure. They contain a separate internal control which provides an independent standard for the RNA extraction efficiency in the used stool sample.

→ **MutaREX® Norovirus (KG 290196)**
→ **MutaPLEX® Norovirus (KG 190196)**
Two ELISA-Systems enable a personalized TNFα blocker therapy

A well-established therapy for patients with chronic inflammatory bowel diseases (IBD) or rheumatic symptoms is the treatment with a tumor-necrosis-factor-alpha (TNFα) blocker such as Infliximab (Remicade®), Adalimumab (Humira®) or Enbrel®. The long term efficacy of these TNFα blockers is influenced by bioavailability, pharmacokinetics and immunogenicity. A TNFα blocker therapy should therefore be optimally adjusted to the individual clinical progress to reduce adverse effects and secure therapy success. The following factors can be modulated according to need: dosage and treatment intervals, choice of compound and additional treatment with immunosuppressing agents.

Drug level monitoring

The therapeutic effect of a TNFα blocker correlates in particular with the serum level of the compound. Drug level monitoring (esp. of the trough level) is therefore an effective tool to ensure a sufficient amount of the agent in the circulation and to adjust the dosage if necessary.

Detection of anti-drug-antibodies (ADA)

Some patients develop antibodies against the TNFα blocker (Anti-Drug-Antibodies, ADA). This individual immunogenicity can reduce drug efficacy and cause severe allergic reactions. If the therapy is not effective or if adverse effects occur, the ADA-level should be determined in addition to the TNFα blocker concentration.

Immundiagnostik’s ELISA-package for individual therapy management

Next to the broad product portfolio for the differential diagnosis of IBD, Immundiagnostik now offers two assays for the individual monitoring of a TNFα blocker therapy: Our ELISAs for the quantitative determination of the drug level (e.g. Remicade®, Humira®) provide vital information about the bioavailability of the TNFα blocker. In addition, our ELISAs for ADA-detection assess the immunogenicity of a given TNFα-blocker (e.g. Remicade®, Humira®, Enbrel®). These assays are an ideal combination for effective therapy monitoring and treatment control - a prerequisite for a comprehensive therapy success with less side effects. Furthermore, gut inflammation and relapse control in IBD-patients can be monitored with our PhiCal®-Calprotectin-ELISA.

Data level monitoring and ADA-determination enable an individualized TNFα blocker therapy. Figure from Bendtzen K et al. (2009) Scand J Gastroenterol.

The need for an individual control of TNFα therapies was one of the main topics at the satellite symposium which Immundiagnostik held on diagnosis and therapy control of IBD at the Congress for Visceral Medicine in October 2009 (sponsored by Essex Pharma)

Foto: Round table discussion of renowned gastroenterologists about diagnosis and therapy of IBD. (left to right: Prof. Dignaß, Priv.-Doz. Dr. Sturm, Prof. Stein).

ELISAs for TNFα blocker monitoring

→ Remicade® (K 9655)
→ Humira® (K 9657)

ELISAs for TNFα Blocker ADA detection

→ Humira® (K 9652)
→ Remicade® (K 9650)
→ Enbrel® (K 9653)

ELISA for Calprotectin determination

→ PhiCal® Calprotectin (stool) (K 6937)
On this page we will introduce scientific publications which refer to our assays

**ß-Defensin2: Reliable stool-marker for ulcerative colitis**

ß-Defensins are anti-microbial peptides for the protection of the gut mucosa. They disarm pathogens by permeabilizing their membrane. The healthy intestinal mucosa produces ß-defensin1 constitutively, while ß-defensin2 is synthesized only during inflammation. The high stability of ß-defensin2 in faeces (1 week at 4°C) is extremely valuable for laboratory diagnostics.

The publication of Kapel et al. (s. grey box) describes a French pilot study which has examined the faecal ß-defensin2 level in children as a biomarker for the differentiation between inflammatory and non-inflammatory intestinal diseases. The authors analyzed stool samples of 31 children with confirmed bowel inflammations (endoscopy, histology, radiology) and samples of 15 healthy controls. The concentration of faecal ß-defensin2 in these 46 samples has been analyzed with our quantitative ELISA and compared to the inflammation markers calprotectin and TNFα.

Interestingly, the ß-defensin2 level in CD-patients never rose above 200 ng/g despite pronounced gut inflammations, demonstrating the specificity of ß-defensin2 for UC. Furthermore, the ß-defensin2 concentrations in this study correlated well with the calprotectin levels.

The authors conclude that only low levels of ß-defensin2 are present in the faeces of healthy individuals. During intestinal inflammation however, ß-defensin2 is upregulated and released into the stool leading to higher concentrations in the samples. In addition, the authors propose ß-defensin2 as a marker for the differentiation between UC and CD, based on the hypothesis that these IBD-subtypes differ in the regulation of the mucosal defense mechanisms.

Our ELISA reproducibly detected ß-defensin2 in all stool samples. Healthy subjects had a medium ß-defensin2 level of 13 ng/g, while IBD patients exhibited a significantly higher concentration of 125 ng/g. Of these, the 5 UC-patients showed the highest medium concentrations of 356 ng/g (s. Fig.1).

### Abb. 2: Structure of human ß-defensin2

Abb 2: Structure of human β-defensin2

Our ß-defensin ELISAs:

- **HNP 1-3** (=human neutrophile peptides 1-3, =α-Defensine 1-3) (KHHK317)
- **ß-Defensin 2** (hBD2) (K6500)
- **ß-Defensin 5** (hBD5) (K6515)
- **ß-Defensin 6** (hBD6) (K6516)

In addition, we offer a multitude of antibodies and antigens related to this topic.
EVENTS & ACTIVITIES

• 5th Congress of ECCO (European Crohn’s and Colitis Organisation)
  25. – 27. February 2010, Prague, CZ

• Osteology-Congress
  03. – 06. March 2010, Berlin

• 53. Symposium of the German Society for Endocrinology
  03. – 06. March 2010, Leipzig

IN VINO SANITAS

Photometric tests determine the antioxidative capacity of wine

Antioxidants play a key role in the prevention of heart attack. They inhibit for example the buildup of cholesterol plaques in arterial vessels, thereby lowering the thrombosis risk. Grapes contain potent antioxidants which are extracted and enriched during the process of winemaking. Especially red wine embodies a multitude of antioxidants - approximately ten times more than white or rosé wine.

Would you like to know which sort or vintage is best for the protection of your cardiovascular system?

Send us a sample of your wine!

We analyse the antioxidative capacity and issue a meaningful certificate about the preventive capacity of your wine in comparison to vitamin C.

Praxis to the point

TIP

Attention to updates of ELISA manuals

In dialogue with our customers, we constantly optimize our immunoassays for laboratory use. In this process, parameters of the lab protocols are subject to change, such as incubation times or reference areas. Therefore, ELISA manuals should be checked each time you receive a new order or charge.

In addition, our lab personnel is happy to answer your questions or receive your feedback.

For this analysis we use or photometric test systems for the determination of the oxidative potential (PerOx) and the antioxidative capacity (ImAnOx). These assays define the ratio of oxidative and antioxidative components and have been developed for medical diagnostic purposes - i.e. for the diagnosis of the oxidative stress status in patients.