

23 March 2010, European Parliament, Brussels

The role of Vitamin D in Gastro Intestinal disease

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***UNITED EUROPEAN
GASTROENTEROLOGY
FEDERATION - UEGF***

Gastroenterology

- Nutrition
- Intestine
- Liver
- Immunology
- Cancer
- Epidemiology
- More.....



GI disease associated with vitamin D deficiency

- Inflammatory bowel disease
 - Crohn's Disease and Ulcerative colitis
- Celiac disease
- Malabsorption
 - Short bowel syndrome
 - Gastric Bypass
- Liver disease
- Chronic pancreatitis
 - Cystic Fibrosis
- Colorectal cancer

Effects of Vitamin D Deficiency in gastro-intestinal diseases

- Inflammatory bowel disease (IBD)
 - Crohn's disease
 - Ulcerative colitis

- Osteoporosis and increased fracture risk
- Reduction local anti-inflammatory effect of active Vit D (1,25-(OH)₂-D)
- Role in development of IBD

- Malabsorption diseases: celiac disease, primary biliary cirrhosis, dysfunction of enterohepatic circulation, surgery

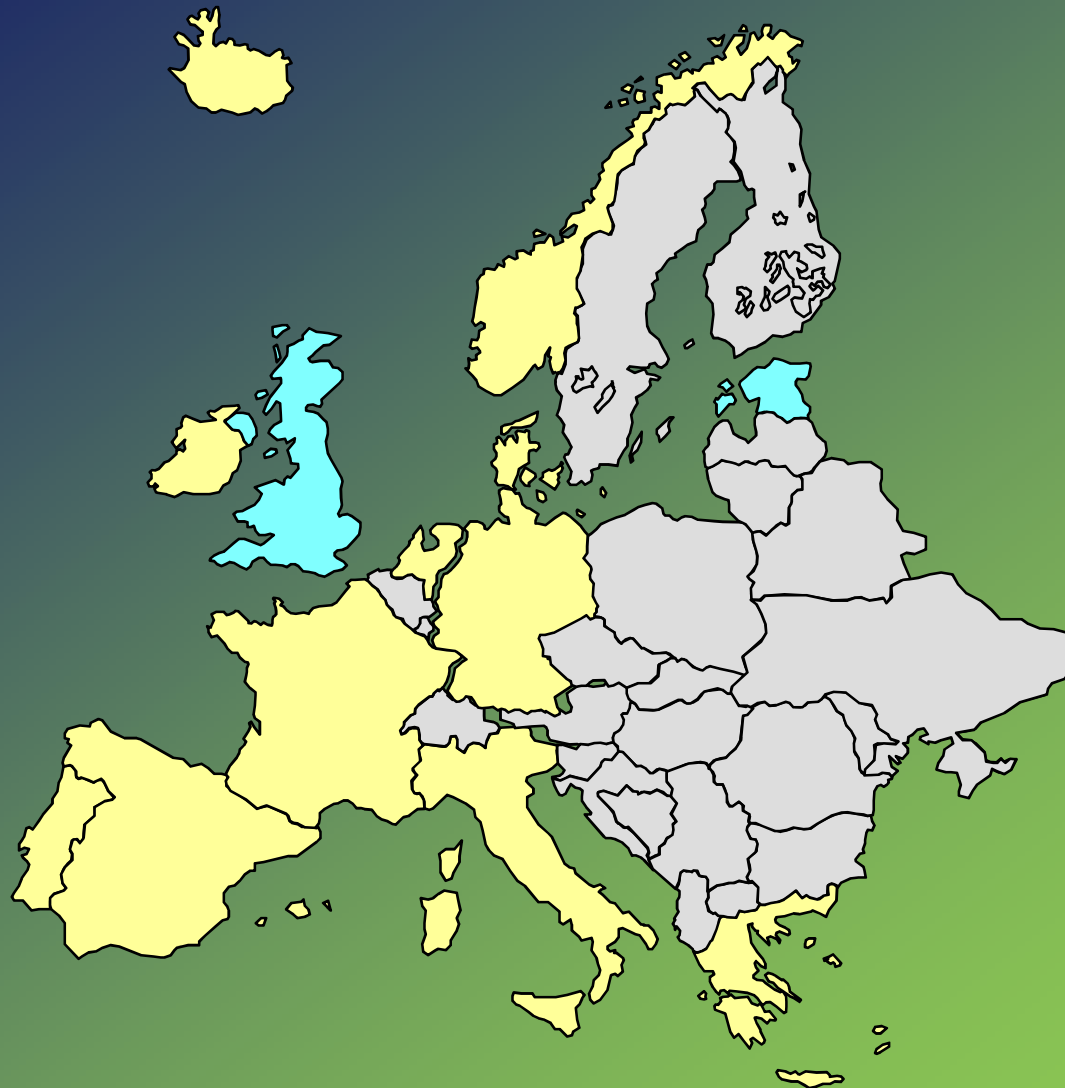
- Osteoporosis and increased fracture risk

- Colorectal cancer

- Associated with increased risk of developing colorectal cancer

EG IBD

European
Collaborative study
group of
Inflammatory bowel
disease



epidemiology of IBD

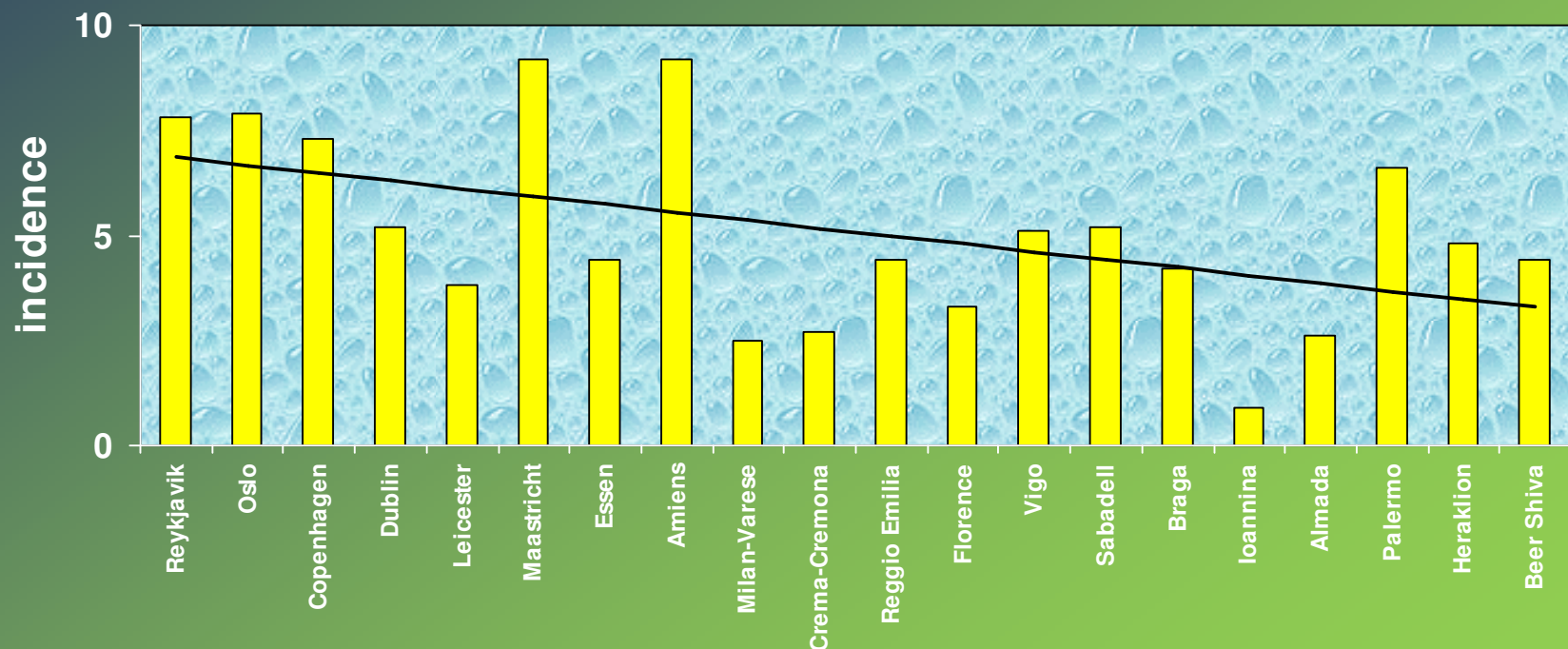


20 centres
in 12 countries
founded in 1989

Age and gender adjusted incidence Crohn's disease 15-64 years

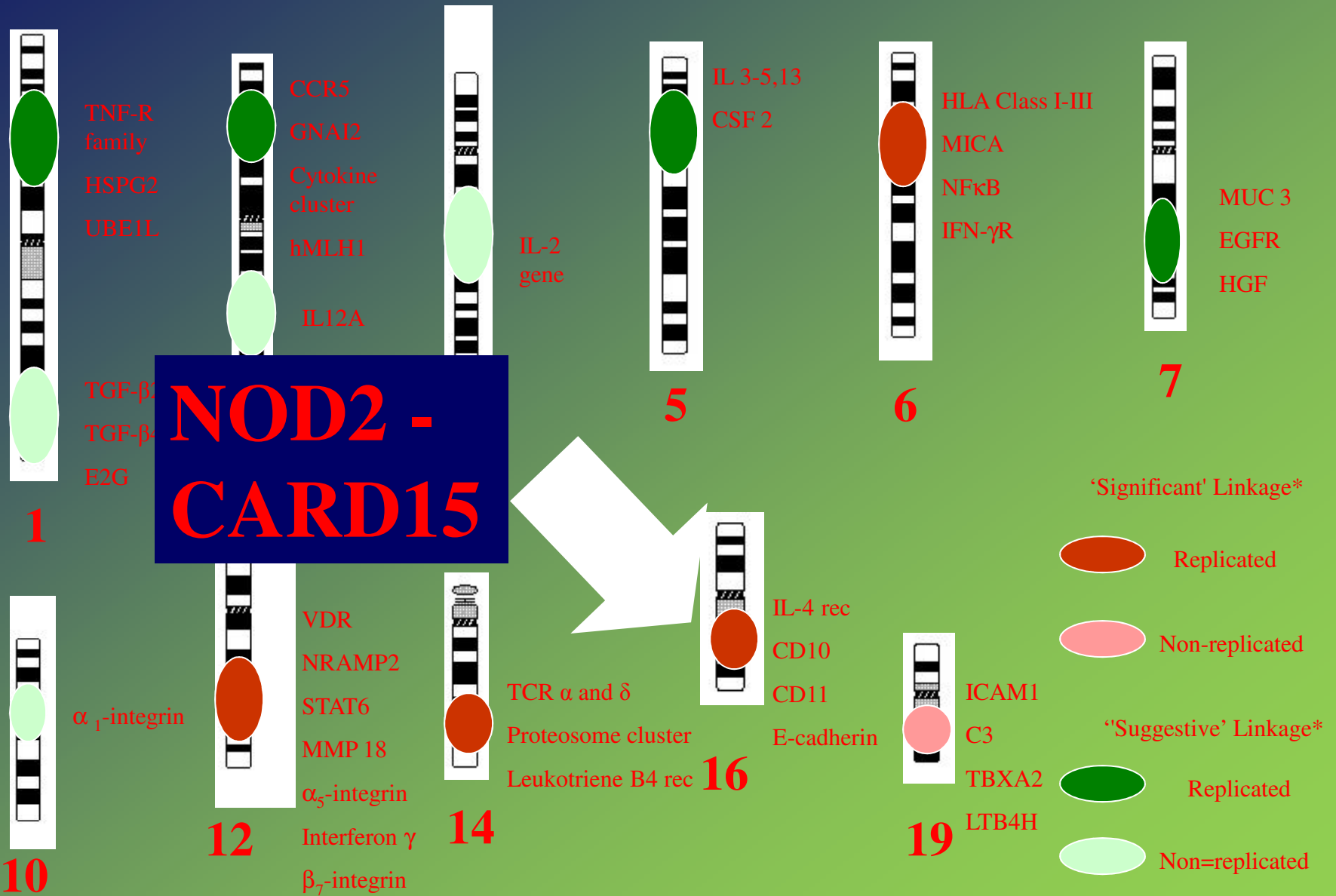
North

South



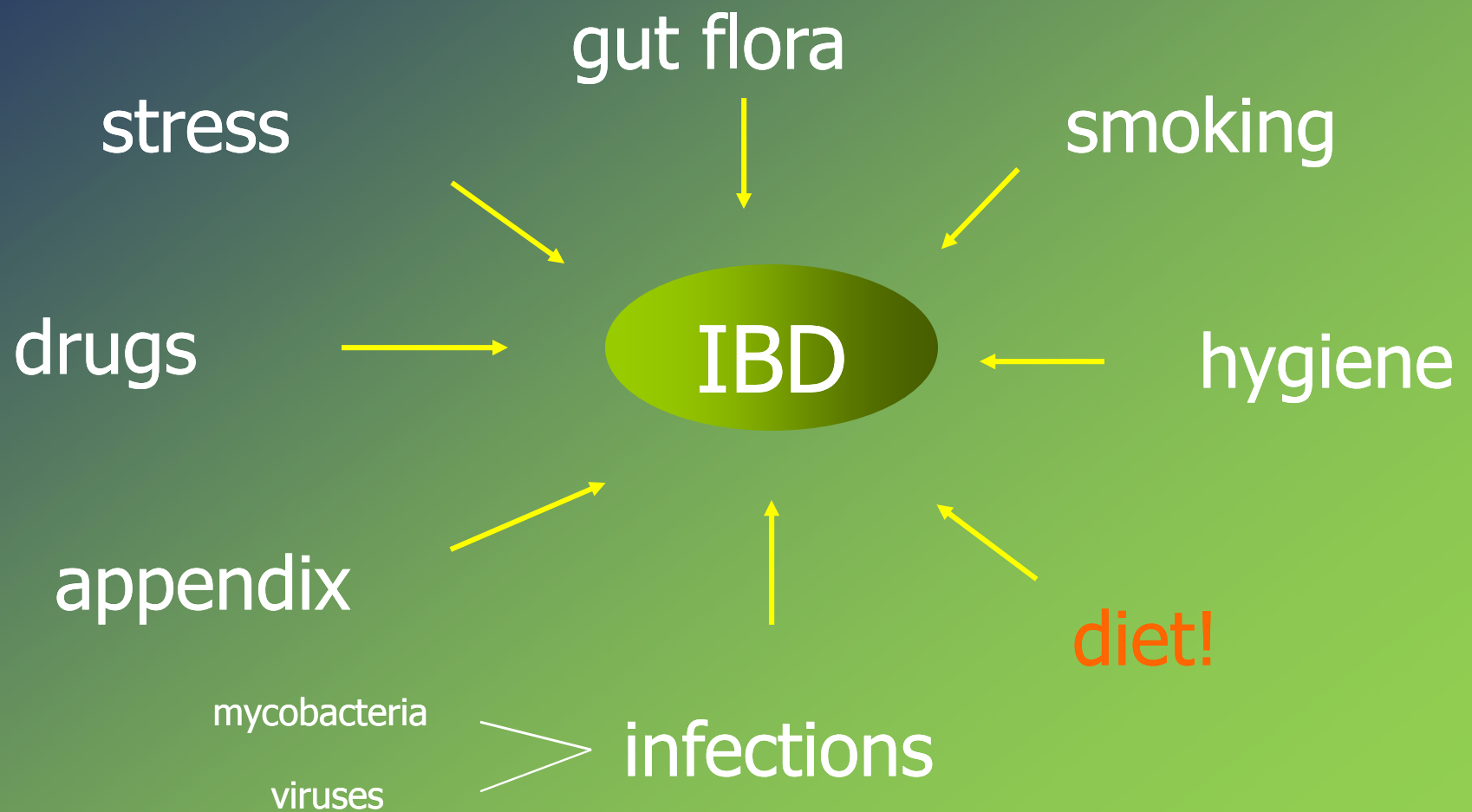
EC IBD Study 1991-1993

Linkage areas and positional candidate genes in IBD



*Significance levels defined by Lander and Kruglyak

Environmental risk factors development & outcome



Vit D deficiency and IBD (1)

- Prevalence of Vit D deficiency: 38-61% in IBD patients
- Vit D deficiency leads to dysregulation of the bone remodeling process and stimulates osteoclastogenesis (bone resorbment)
- IBD patients are at increased risk of developing osteoporosis and bone fractures
 - Prevalence of osteoporosis in IBD ranges between 17-41%
 - Relative Risks on bone fractures range between 1.2-2.2

Prevalence of Vit D deficiency in IBD patients	Total n=304
25-(OH)-D < 30 nmol/l	15 (5%)
25-(OH)-D < 50 nmol/l	116 (38%)
25-(OH)-D 50-70 nmol/l	139 (46%)
25-(OH)-D ≥ 70 nmol/l	34 (11%)

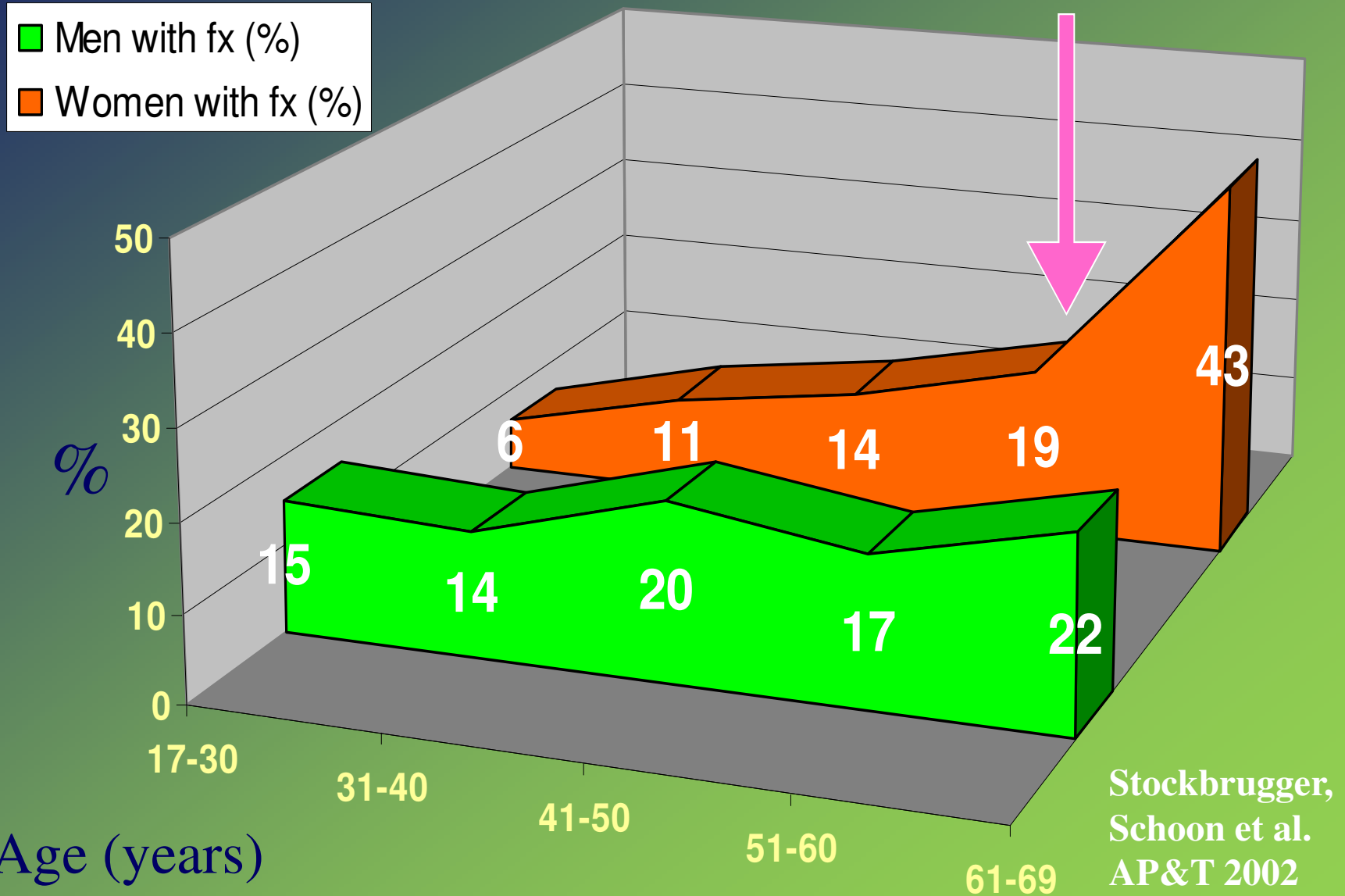
Bours, et al. Vitamin D deficiency in patients with Inflammatory Bowel Disease (IBD) 37th ECTS, Glasgow, 2010

Vit D deficiency and IBD (2)

- Causes of Vit D deficiency in IBD are identical as in general population, except: malabsorption caused by diarrhea, inflammatory process, and surgery-related problems.
- Vitamin D receptor (VDR) expression and its genetic polymorphisms are thought to play a role in the activity of VDR to bind with 25-(OH)-D throughout the body
- Mounting evidence exists showing importance of anti-inflammatory role of Vit D → → → Is Vit D deficiency associated with an increased risk of developing IBD?
 - Observational data shows association between latitude and IBD prevalence
 - Vitamin D Receptor (VDR) knockout mice show inflammatory process in intestines similar to IBD combined with bone loss
 - Vit D supplementation in VDR knockout mice leads to reduction IBD symptoms

Vertebral fractures in Crohn's disease

MATRIX STUDY AT BASELINE (273 patients, mean age 36.7 years)



Conclusion

- Vitamin D has a fascinating role in Gastroenterology
- Convincing evidence in CRC and autoimmune disease
- Etiologic mechanism should be subject of further research

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What do we need? I

Short term: for Patients

- Awareness for patients and doctors
- Low threshold in drug availability and reimbursement
- More research
 - Epidemiological
 - Basic science:
 - Genetic: Vitamin D Receptor and Genetic polymorphisms
 - Immunologic: effects of vitamin D

What do we need? II

Long-term: Population based

- Get Northern Europe at the same levels of vitamin D as Southern Europe
- Probably reducing cancer and auto-immune disease

What do we need? III

- Legislation for Europe?
- Collaboration
- Task force
 - Fortifying of foods (uniformly) after expert consensus

