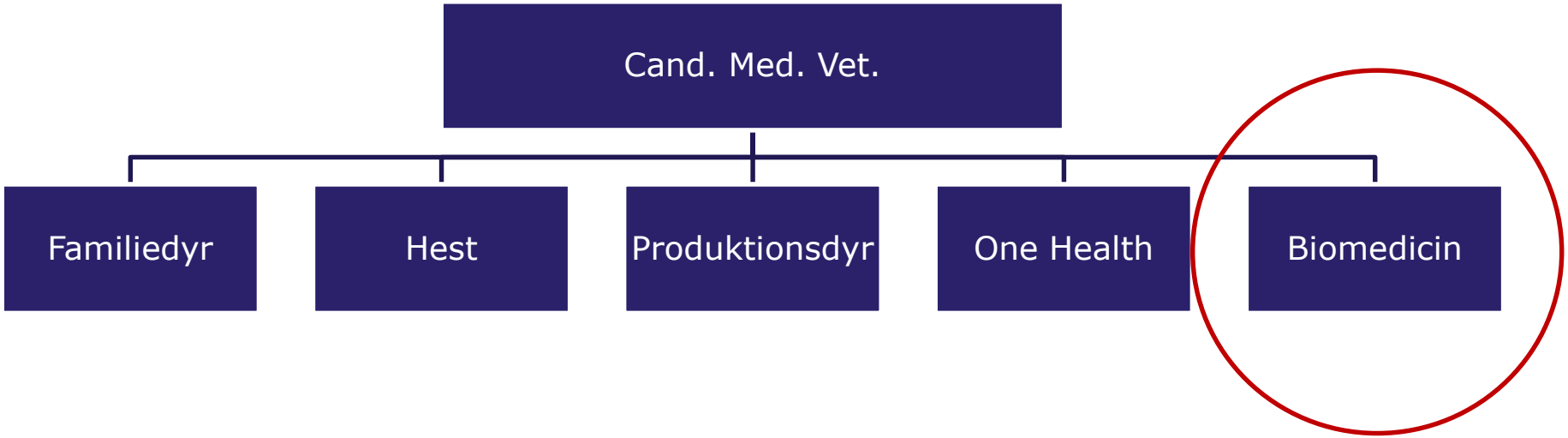
Udvalget for Fødevarer, Landbrug og Fiskeri 2014-15 (1. samling)
FLF Alm.del - Bilag 125
Offentligt

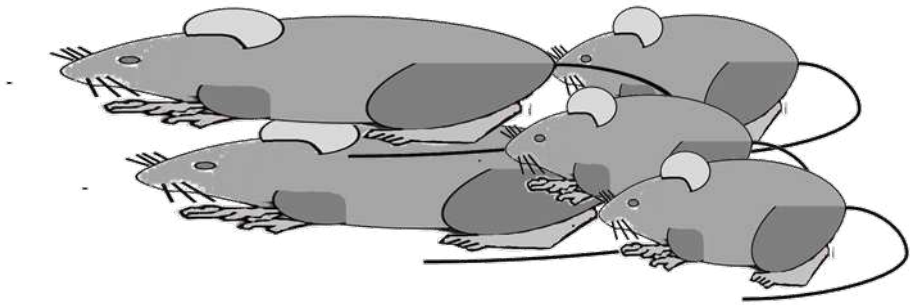
Axel Kornerup Hansen
Sektion for Eksperimentelle Dyremodeller
Institut for Veterinær Sygdomsbiologi

Danmark som foregangsland i veterinær forskning

De veterinære differentieringer

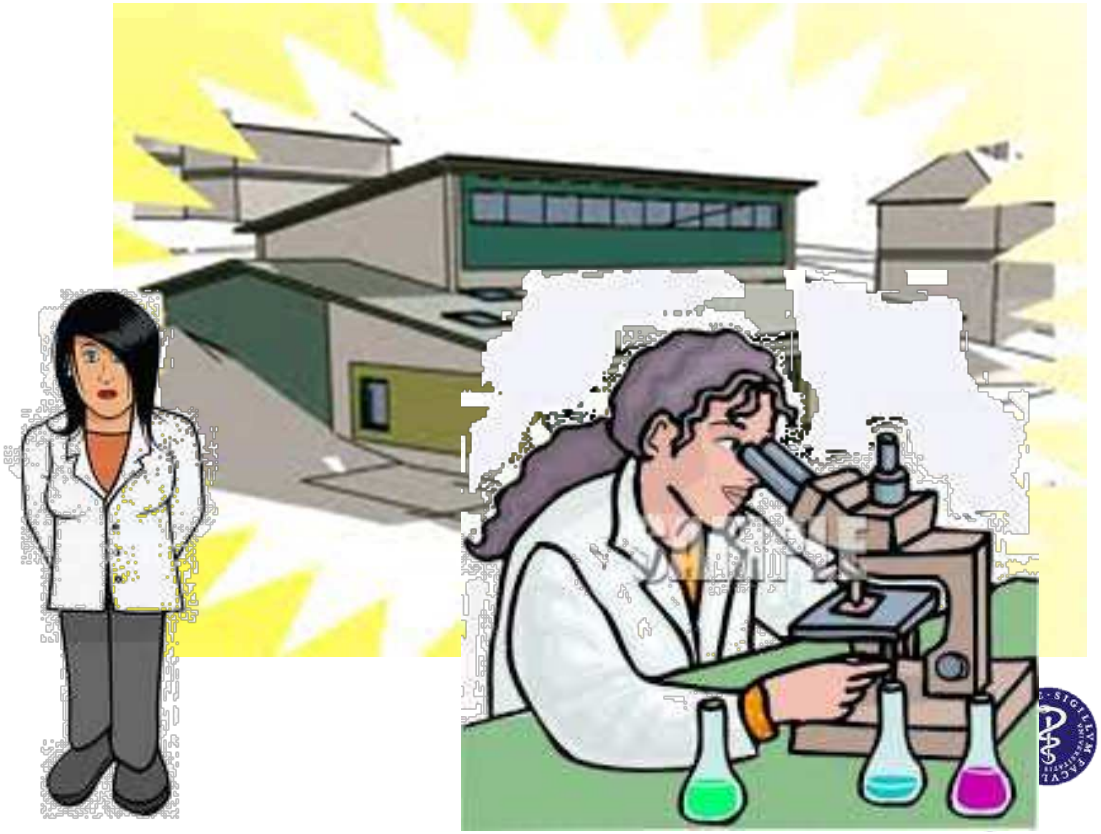


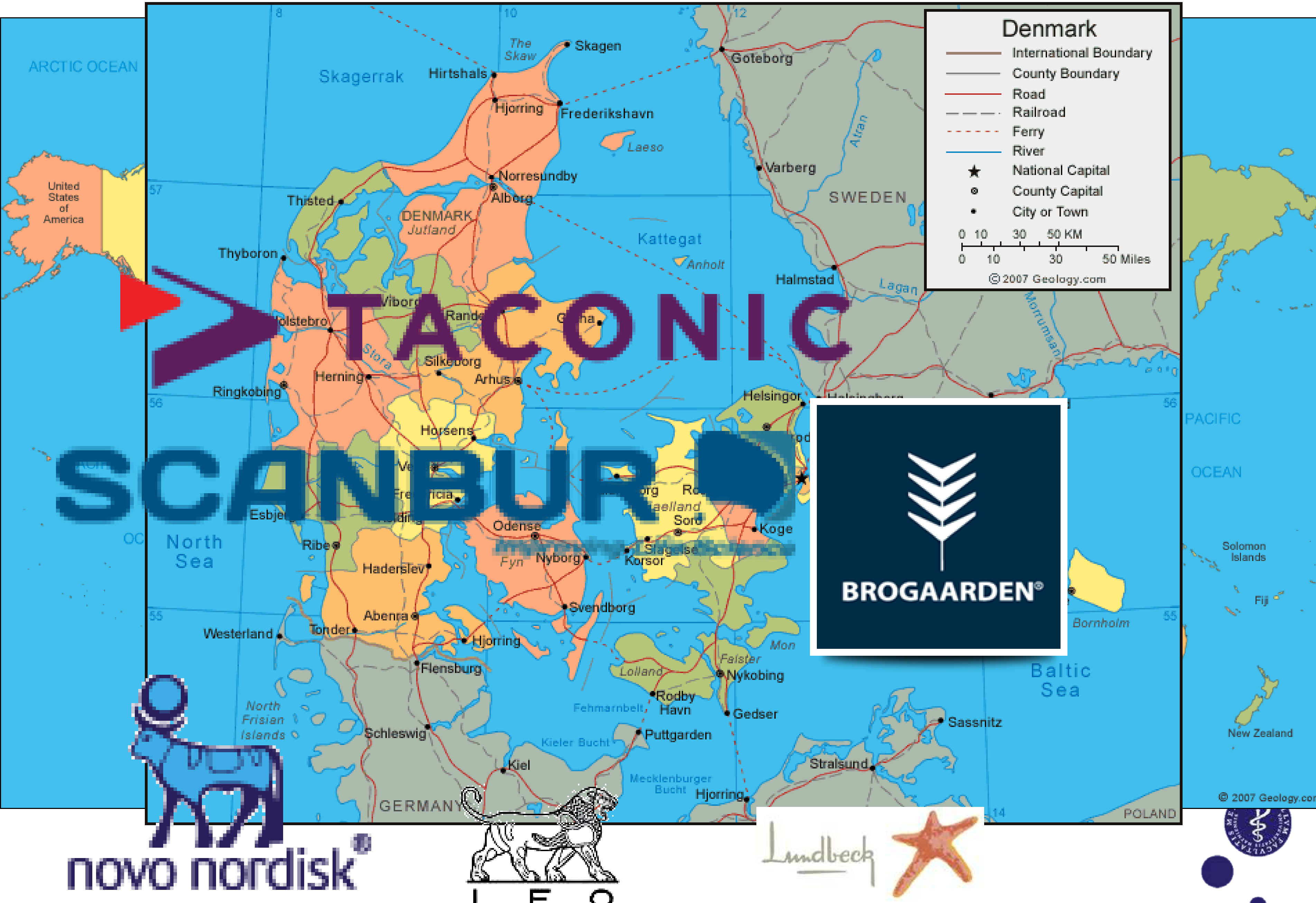
Veterinær Biomedicin



Genetik
Molekylær biologi
Mikrobiologi
Patologi
Farmakologi
Toksikologi
Immunologi

Forsøgsdyrvidenskab




Denmark
International Boundary
County Boundary
Road
Railroad
Ferry
River
National Capital
County Capital
City or Town
0 10 30 50 KM
0 10 30 50 Miles
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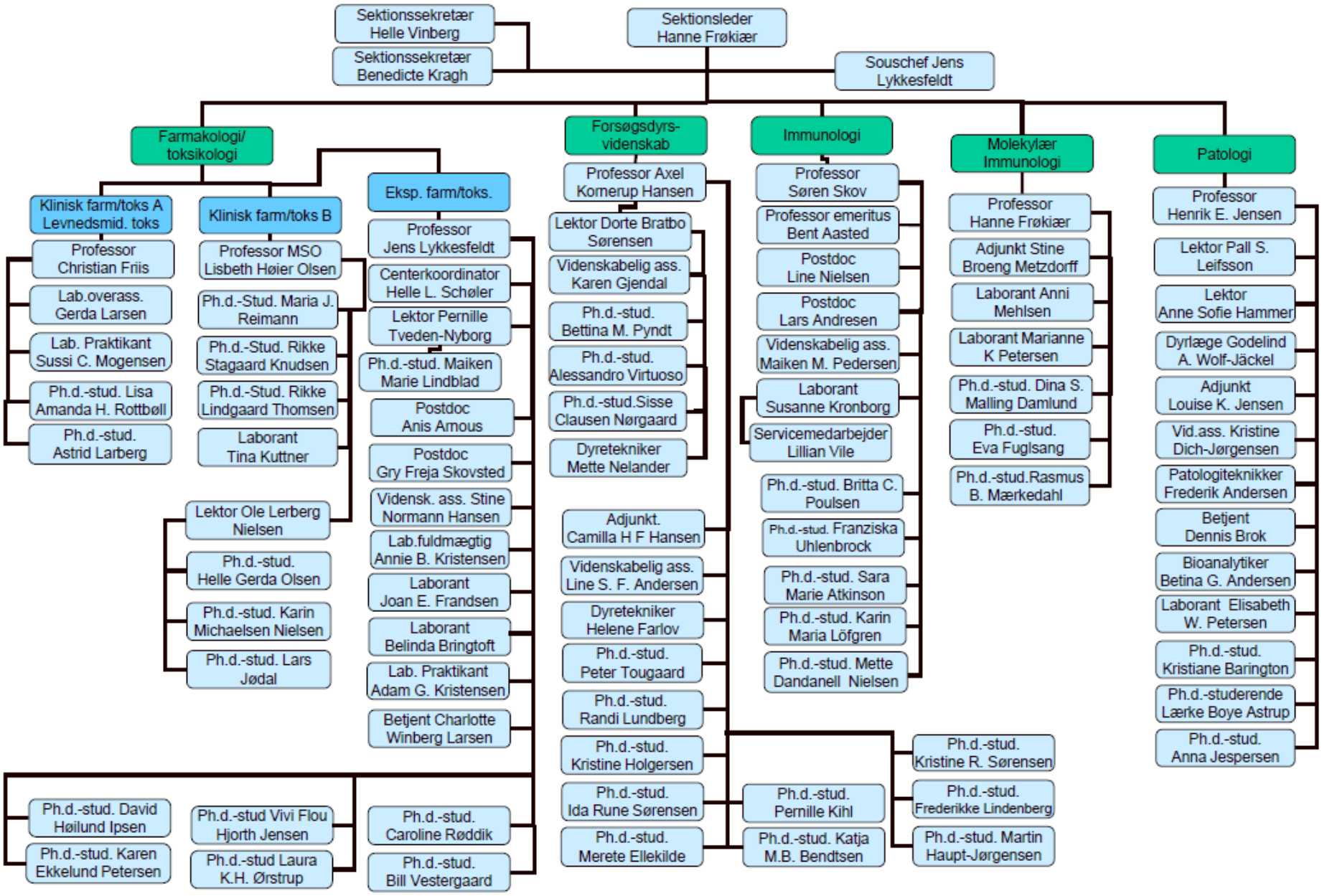
Sektion for Eksperimentelle Dyremodeller, oktober 2014



Forskningsgruppen for forsøgsdyrvidenskab og -velfærd

Axel Kornerup Hansen (Prof.)
Dorte Bratbo Sørensen (Assoc. Prof.)
Camilla Hartmann Friis Hansen (Assist. Prof.)
Karsten Buschard (Adj. Prof.)

13 PhD-studerende
7 specialestuderende

2 dyreteknikere

Forskning

Fokus

- Forbedring af dyremodeller, primært mus
- Udgangspunkt i fodring, tarmflora og andre miljøfaktorer
- Inflammatoriske og neurobiologiske sygdomsmodeller

Væsentligste samarbejdspartnere

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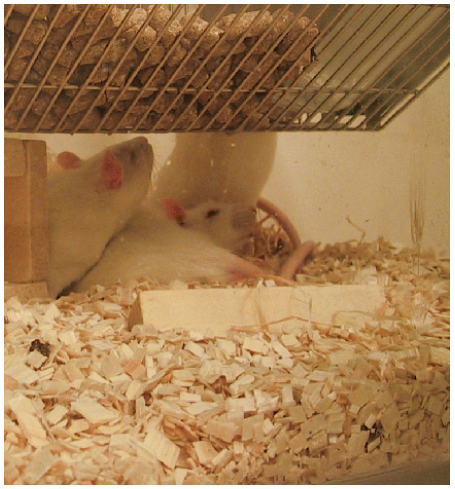

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1 mus + 1000 slags mikrober

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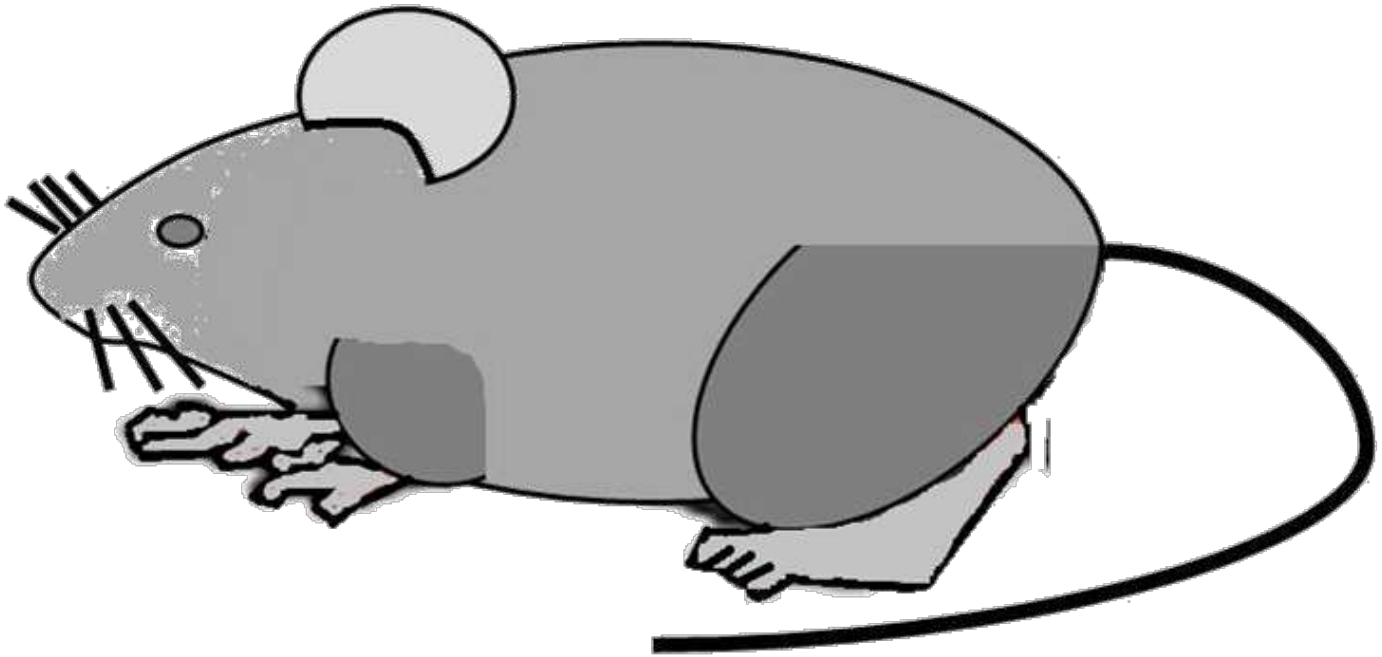

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Comparative Immunology, Microbiology and Infectious Diseases

journal homepage: www.elsevier.com/locate/cimid

Review

Tim… labo… …ota i… …tion of

Andr…

[a] Institut… [b] Depart… Frederiks… …nnover, …culty of … …ny …7, DK-1870

A R T … A C T …

Article hi…
Received …
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Accepted…

Keywords:
Gut microbiota
Laboratory rodents
Health monitoring
Animal models

…biota (… …matical… …availab… …3) the l… …vendo… …differen… …iments has become …agenomic technolo- …cterize even subtle …rict barriers at labo- …t transgenic mouse …composition. In this review the GM is described as a variable in animal experiments which need to be reduced for scientific as well as ethical reasons, and strategies how to implement this in routine diagnostic procedures are proposed. We conclude that we have both enough information available to state that the GM has an essential impact on animal models, as well as the methods available to start dealing with these impacts.

Organ-relateret sygdom
Type 1 diabetes
Arthritis
IBD
Multiple sclerosis
Stress
Visceral smerte
Inflammatorisk smerte
Atherosclerose
Atopic dermatit
Kontakt-allergi

Helkrops-sygdom
Allergi
Fedme
Lupus erythematosus
Type 2 diabetes
Depression
Skizofreni

Eur J Nutr
DOI 10.1007/s00394-014-0694-z

High-fat feeding increases hepatic vitamin C synthesis and its circulatory mobilization in mice

Britt Tranberg · Axel Kornerup Hansen · Jens Lykkesfeldt

...imals 2012; 46: 231–236. DOI: 10.1...

...and caecal microbi...

...ame way

...rance in Diet-Induced ...ndent

...ournal of Diabetes Research ...Volume 2013, Article ID 31932

...n,[2] K. Skovgaard,[3] B. C. Rolin, ...and A. K. Hansen[1]

...e Biology, Faculty of Health and Medical Sc... ...rk ...1958 Frederiksberg, Denmark ...rsity of Denmark, Bülowsvej 27,

Copenhagen

DIABETES/METABOLISM RESEARCH AND REVIEWS
Diabetes Metab Res Rev 2006; 22: 220–225.
Published online 15 December 2005 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/dmrr.609

RESEARCH ARTICLE

Diabetes preventive gluten-free diet decreases the number of caecal bacteria in non-obese diabetic mice

Diabetologia (2012) 55:2285–2294
DOI 10.1007/s00125-012-2564-7

Early life treatment with vancomycin propagates *Akkermansia muciniphila* and reduces diabetes incidence in the NOD mouse

C. H. F. Hansen · L. Krych · D. S. Nielsen · F. K. Vogensen · L. H. Hansen · S. J. Sørensen · K. Buschard · A. K. Hansen

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PLOS ONE

Quantitatively Different, yet Qualitatively Alike: A Meta-Analysis of the Mouse Core Gut Microbiome with a View towards the Human Gut Microbiome

Lukasz Krych[1]*, Camilla H. F. Hansen[2], Axel K. Hansen[2], Frans W. J. van den Berg[1], Dennis S. Nielsen[1]

1 Department of Food Science, Faculty of Science, University of Copenhagen, Copenhagen, Denmark, 2 Department of Veterinary Disease Biology, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark

Characterization of the gut microbiota in leptin deficient obese mice – Correlation to inflammatory and diabetic parameters

CrossMark

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Original Research

Vol 62, No 5
October 2012
Pages 371–380

Gastrointestinal Microbiota and Local Inflammation during Oxazolone-induced Dermatitis in

Dietary Xylooligosaccharide Downregulates IFN-γ and the Low-Grade Inflammatory Cytokine IL-1β Systemically in Mice[1–3]

Camilla H. F. Hansen,[4]* Hanne Frøkiær,[4] Annette G. Christensen,[4] Anders Bergström,[5] Tine R. Licht,[5] Axel K. Hansen,[4] and Stine B. Metzdorff[4]

*Section of Biomedicine, Department of Veterinary Disease Biology, Faculty of Health and Medical Sciences, University of Copenhagen, Frederiksberg C, Denmark; and [5]National Food Institute, Division of Microbiology and Risk Assessment, Technical University of Denmark, Søborg, Denmark

The Jou... Nutrition...

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PLOS ONE

Gut Microbiota Composition Is Correlated to Grid Floor Induced Stress and Behavior in the BALB/c Mouse

Katja Maria Bangsgaard Bendtsen[1]*, Lukasz Krych[2], Dorte Bratbo Sørensen[1], Wanyong Pang[1], Dennis Sandris Nielsen[2], Knud Josefsen[3], Lars H. Hansen[4], Søren J. Sørensen[4], Axel Kornerup Hansen[1]

1 Department of Veterinary Disease Biology, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark, 2 Department of Food Science, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark, 3 The Bartholin Institute, Rigshospitalet, Copenhagen, Denmark, 4 Department of Biology, Faculty of Science, University of Copenhagen, Copenhagen, Denmark

Eur. J. Immunol. 2013. 43: 447–457 DOI: 10.1002/eji.201242462

Gut microbiota regulates NKG2D ligand ... on intestinal epithelial cells

Camilla H. F. Hansen[1], Thomas L. Holm[2], Łukasz Krych[3], Lars Andresen[1], Dennis S. Nielsen[3], Ida Rune[1], Axel K. Hansen[1] and Søren Skov[1]

The Journal of Immunology

REPORTS

...de of Delivery Shapes Gut Colonization Pattern and Modulates Regulatory Immunity in Mice

...[1] Line S. F. Andersen,*[,1] Łukasz Krych,[†] Stine B. Metzdorff,*

...012) 501–508

...6 mice changes glucose tolerance ...ut mucosal immunity

...s Hansen[a], Majbritt Ravn Hufeldt[a,b,c], ...sen[b], Tore Midtvedt[d], Axel Kornerup Hansen[a]

OPEN

SUBJECT AREAS:
APPLIED MICROBIOLOGY
EXPERIMENTAL MODELS OF DISEASE
TRANSLATIONAL RESEARCH

Received
5 June 2014

Transfer o... obese mic...

Merete Ellekilde[1]*, Ellika ... Finn K. Vogensen[2], Denn... & Camilla H. F. Hansen[1]

[1]Department of Veterinary Dise... Frederiksberg C, Denmark, [2]D... Denmark, [3]National Food Insti...

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PLOS ONE

A Possible Link between Food and Mood: Dietary Impact on Gut Microbiota and Behavior in BALB/c Mice

Bettina Pyndt Jørgensen[1]*, Julie Torpe Hansen[1], Lukasz Krych[3], Christian Larsen[1], Anders Bue Klein[2], Dennis Sandris Nielsen[3], Knud Josefsen[4], Axel Kornerup Hansen[1], Dorte Bratbo Sørensen[1]

1 Section of Experimental Animal Models, Department of Veterinary Disease Biology, Faculty of Health and Medical Sciences, University of Copenhagen, Frederiksberg C, Denmark, 2 Neurobiology Research Unit, Rigshospitalet, Copenhagen, Denmark, 3 Department of Food Science, Faculty of Science, University of Copenhagen, Frederiksberg C, Denmark, 4 Bartholin Institute, Rigshospitalet, Copenhagen, Denmark

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Original

Gast inal Microbiot

duri g Oxazolone-in

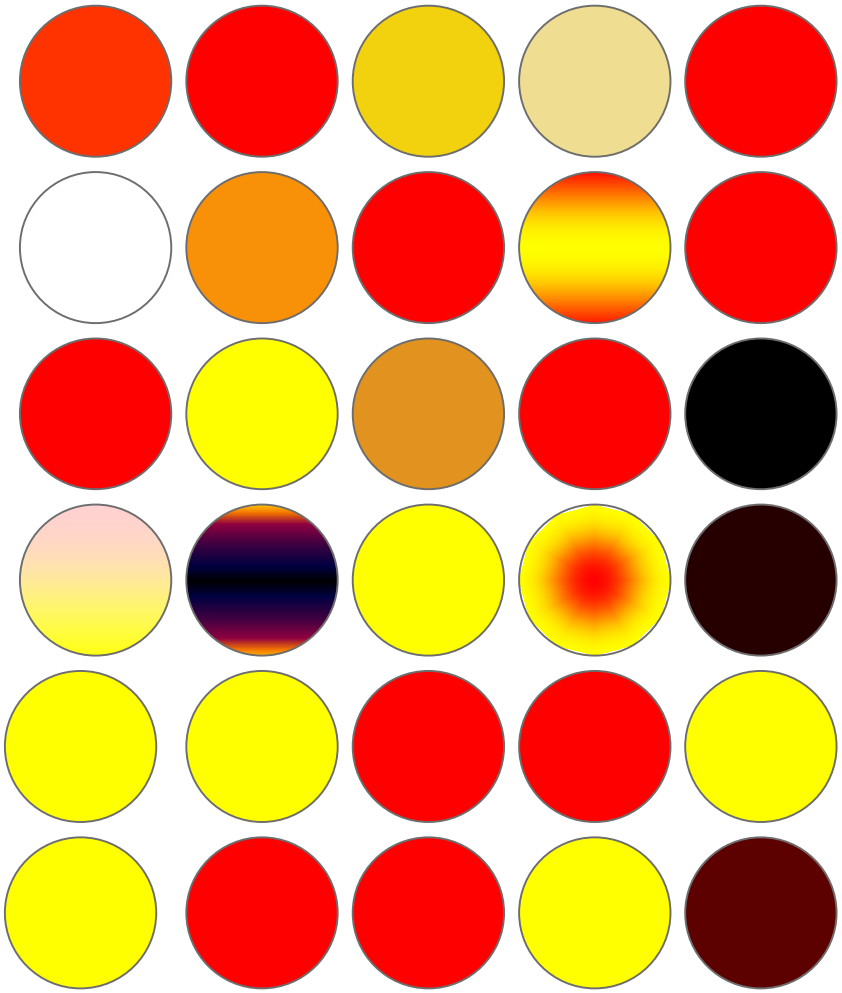
BALB/c

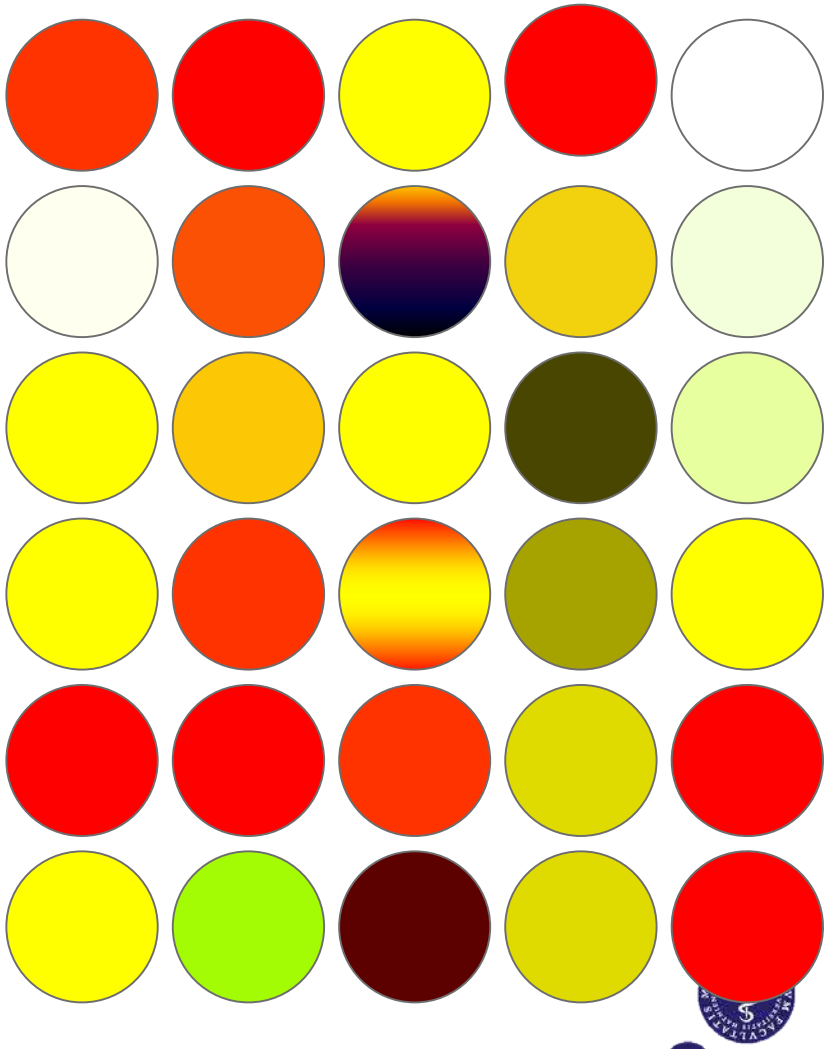
Randi Lundberg,[1,*] Susanne K Clausen,[3] Wanyong Pang,[1] Dennis S Nielsen,[2] Kristian Möller,[3] Knud E Josefsen,[4] and Axel K Hansen[1]

Correlation between start gut microbiota and final ear cytokines

	IFN-γ	IL-□□	IL-8	IL-10	IL-12	TNF-α
r^2	0.93	0.83	0.88	0.86	0.71	0.87
P <	0.001	0.01	0.01	0.01	0.05	0.01

Reduktions-statistik





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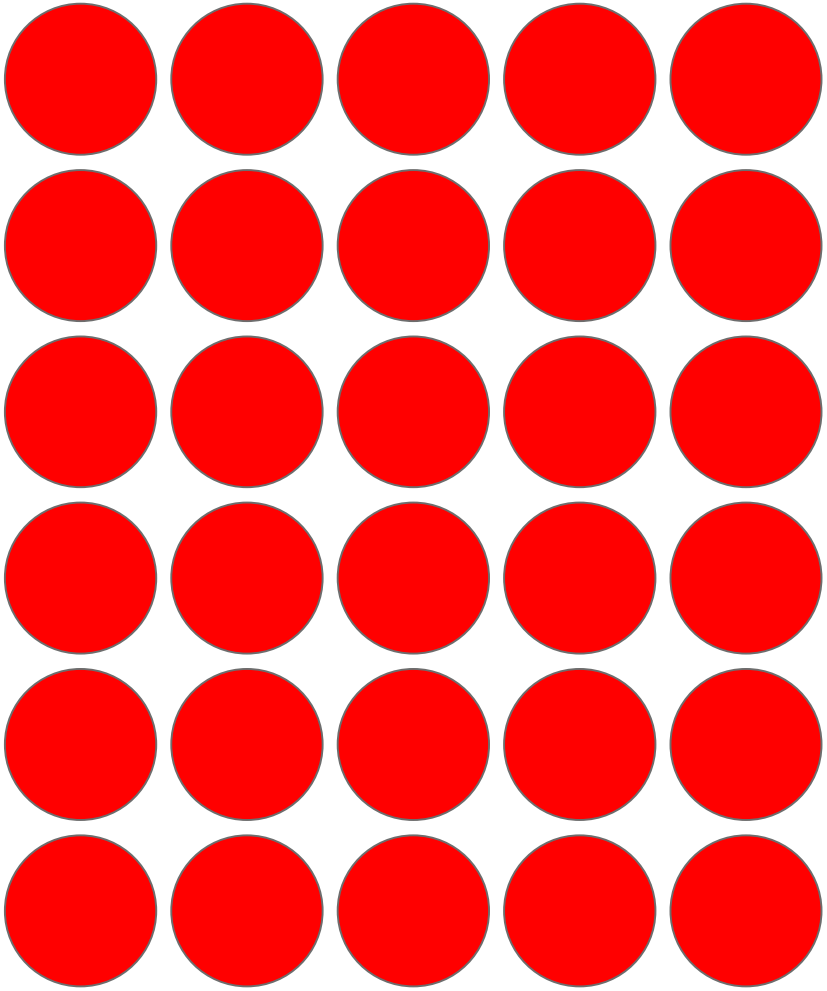

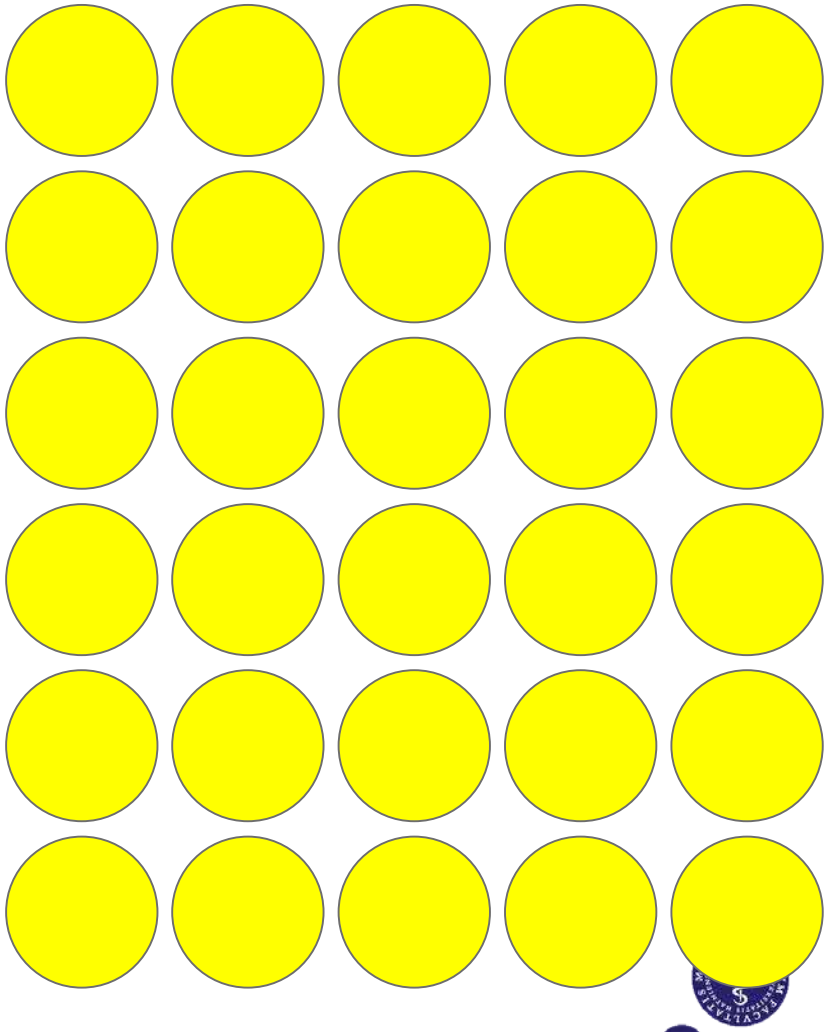

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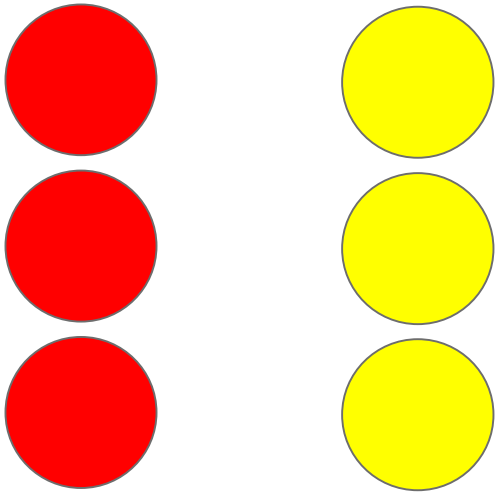

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ANIMAL MODELS

NOD

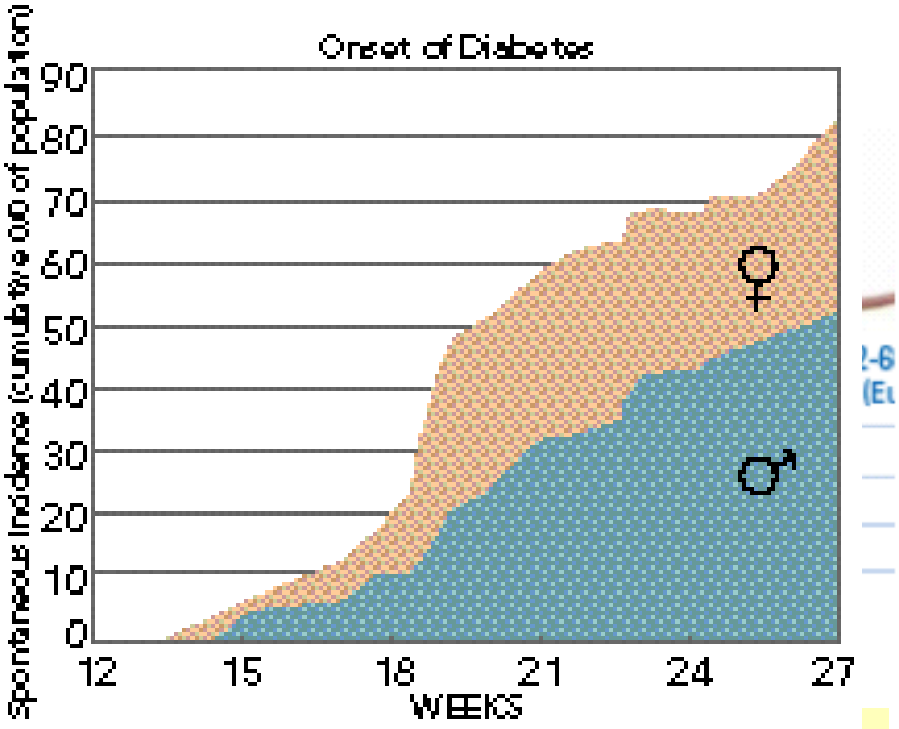
TRADITIONAL INB

Model Number
NOD-F
NOD-M

Description | G

Model Descripti

- Exhibits destructive autoimmune pancreatic insulitis as early as four weeks of age
- Insulin-dependent diabetes is found in some females beginning at three months of



DIABETES/METABOLISM RESEARCH AND REVIEWS
Diabetes Metab Res Rev 2006; **22**: 220–225.
Published online 15 December 2005 in Wiley InterScience (www.interscience.wiley.com). **DOI:** 10.1002/dmrr.609

RESEARCH ARTICLE

Diabetes preventive gluten-free diet decreases the number of caecal bacteria in non-obese diabetic mice

Axel Kornerup Hansen[1]*
Fengjun Ling[1]
Anne Kaas[2]
David P. Funda[2,3]
Helene Farlov[1]
Karsten Buschard[1,2]

[1]*Division of Laboratory Animal Science and Welfare, Department of Veterinary Pathobiology, Royal Veterinary and Agricultural University, Dyrlaegevej 35, Denmark*

[2]*Bartholin Institute,*

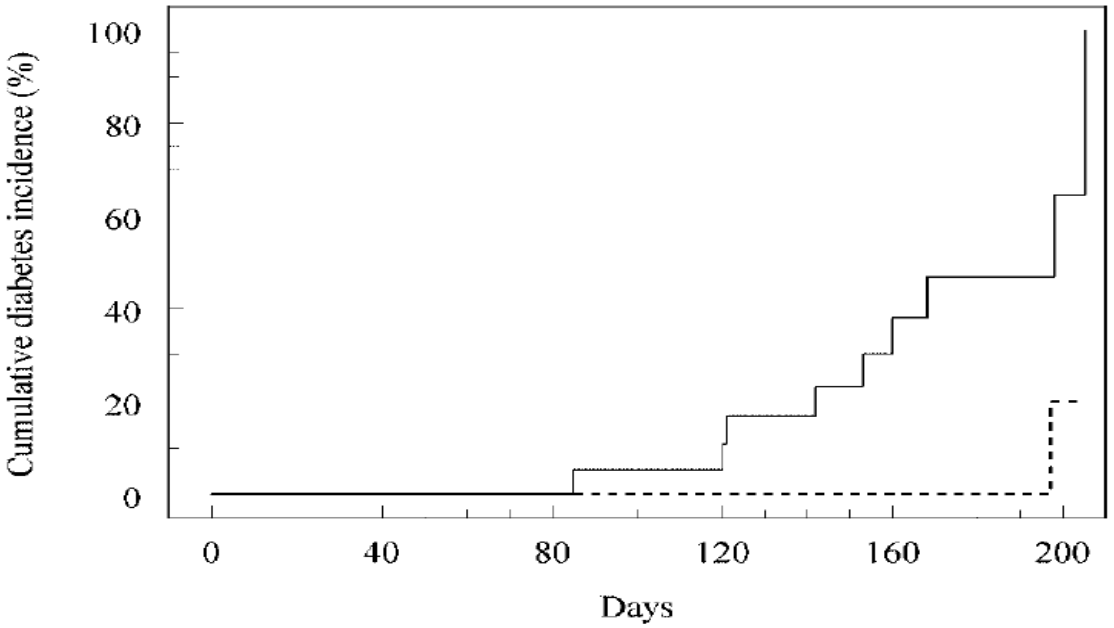
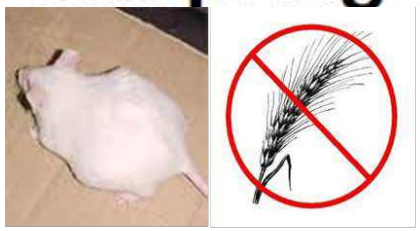


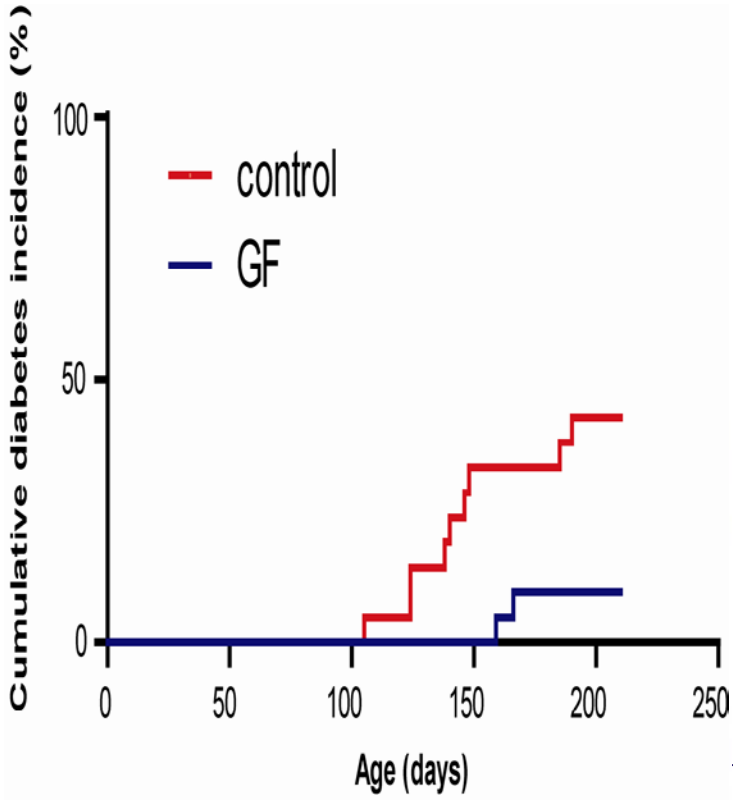
Figure 1. Cumulative diabetes incidence in NOD female mice that were fed standard (full line) and gluten-free (dotted line) diets. Animals are checked until their day of sacrifice if they are diabetic or non-diabetic

Diabetes Volume 63, ■■■ 2014

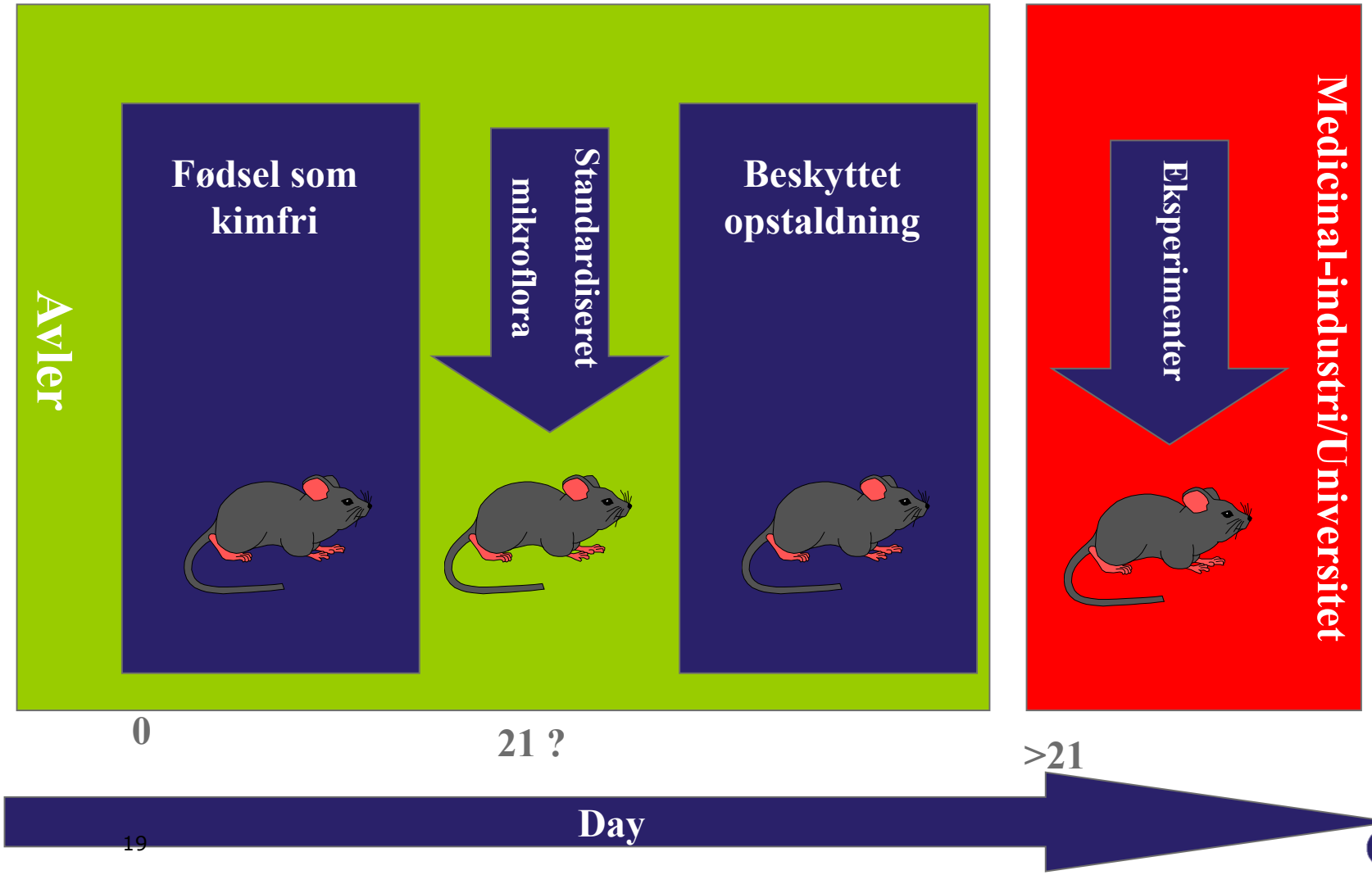
Camilla Hartmann Friis Hansen,[1] Łukasz Krych,[2] Karsten Buschard,[3] Stine B. Metzdorff,[1] Christine Nellemann,[4] Lars H. Hansen,[5] Dennis S. Nielsen,[2] Hanne Frøkiær,[1] Søren Skov,[1] and Axel K. Hansen[1]

A Maternal Gluten-Free Diet Reduces Inflammation and Diabetes Incidence in the Offspring of NOD Mice





Fremtidens forsøgsgnaver



PLoS one

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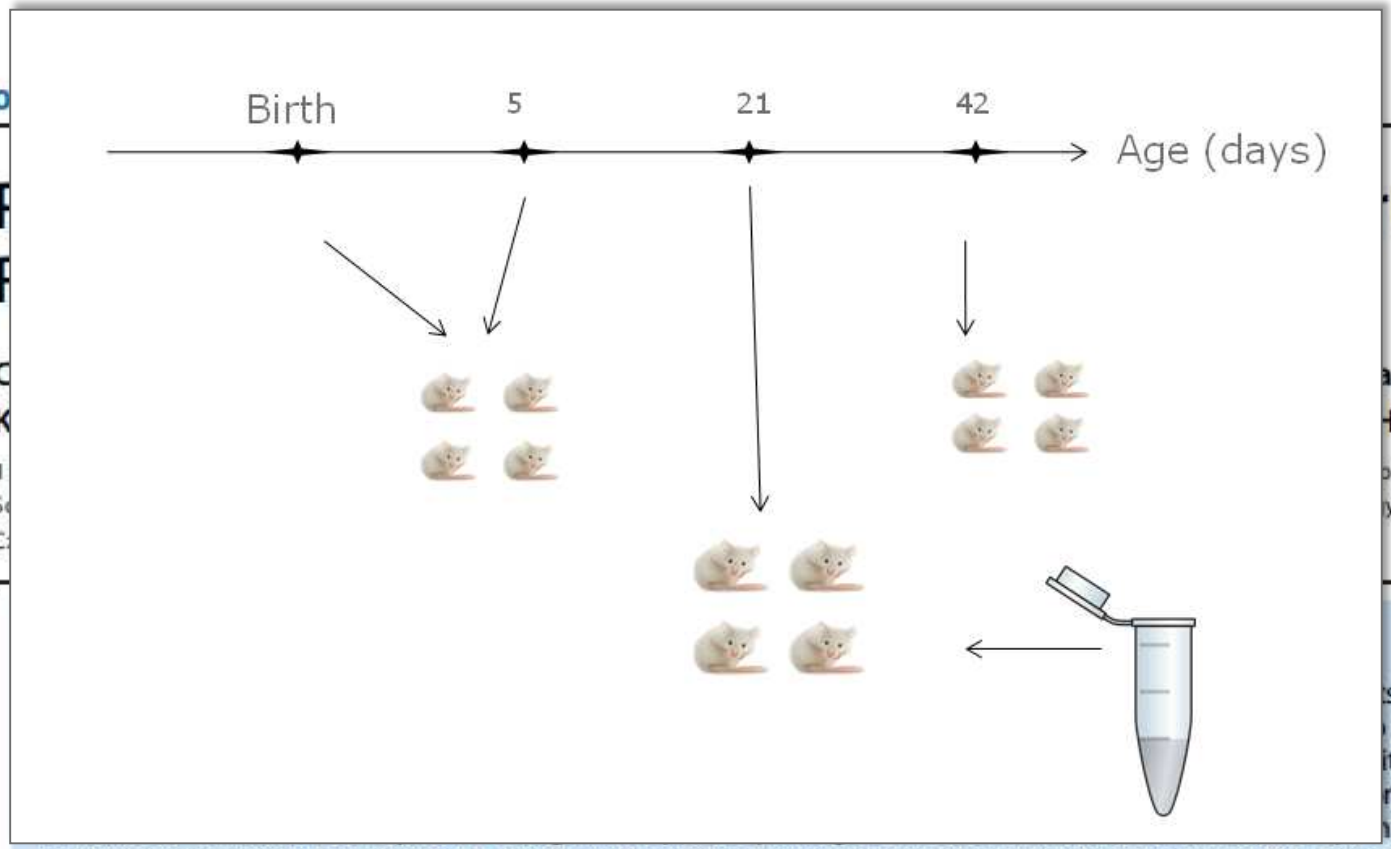
a Zakostelska[3],
Hansen[1]
of Food Science, Faculty of Life
y, Academy of Sciences of the



s immediately after
immune-mediated
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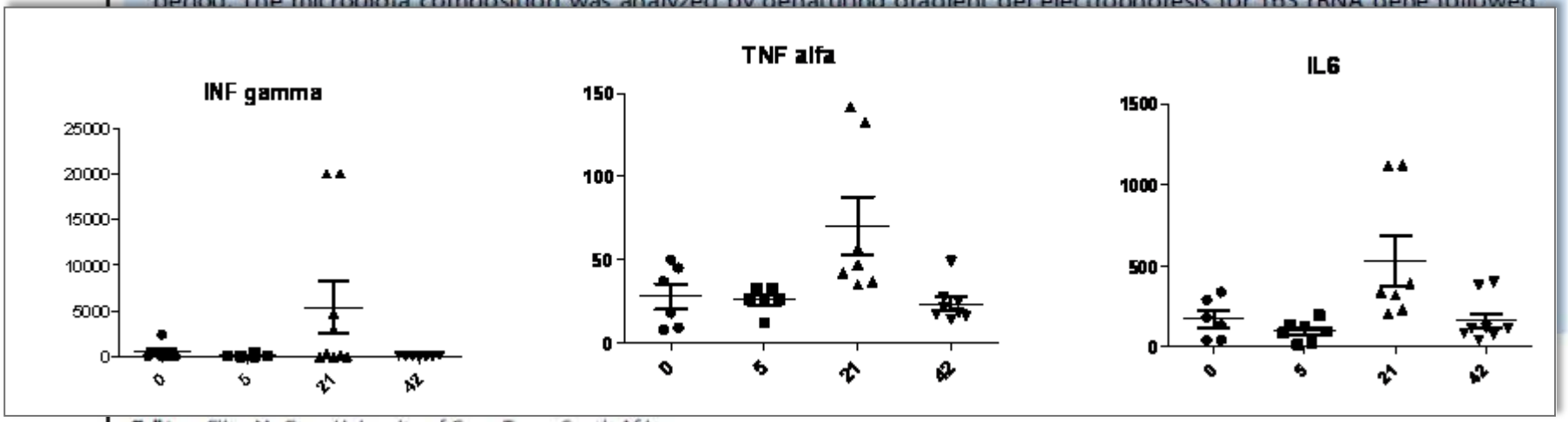
nts in the postnatal
period. The microbiota composition was analyzed by denaturing gradient gel electrophoresis for 16S rRNA gene followed



Editor: Clive M. Gray, University of Cape Town, South Africa

Received October 26, 2011; **Accepted** February 22, 2012; **Published** March 27, 2012

Cell

Gut Immune Maturation Depends on Colonization with a Host-Specific Microbiota

Hachung Chung,[1,2] Sünje J. Pamp,[3,6] Jonathan A. Hill,[2,6] Neeraj K. Surana,[1,2,7] Sanna M. Edelman,[1,2] Erin B. Troy,[1,2] Nicola C. Reading,[1,2] Eduardo J. Villablanca,[4] Sen Wang,[4] Jorge R. Mora,[4] Yoshinori Umesaki,[5] Diane Mathis,[2] Christophe Benoist,[2] David A. Relman,[3,6] and Dennis L. Kasper[1,2,*]

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[2]Department of Microbiology and Immunobiology
Harvard Medical School, Boston, MA 02115, USA
[3]Departments of Microbiology and Immunology and of Medicine, Stanford University School of Medicine, Stanford, CA 94305, USA
[4]Department of Medicine, Gastrointestinal Unit, Massachusetts General Hospital, Harvard Medical School, Boston, MA 02114, USA
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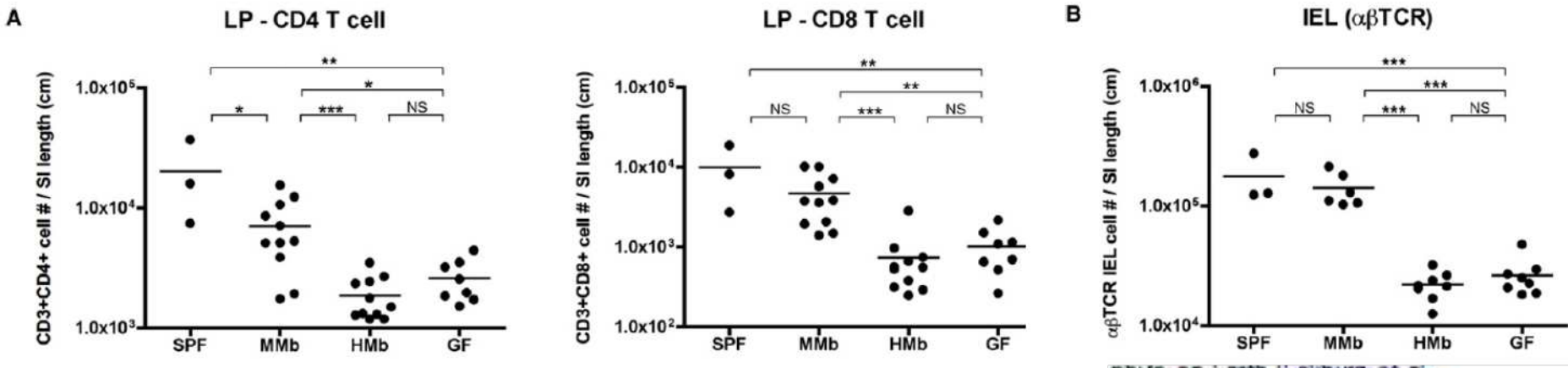
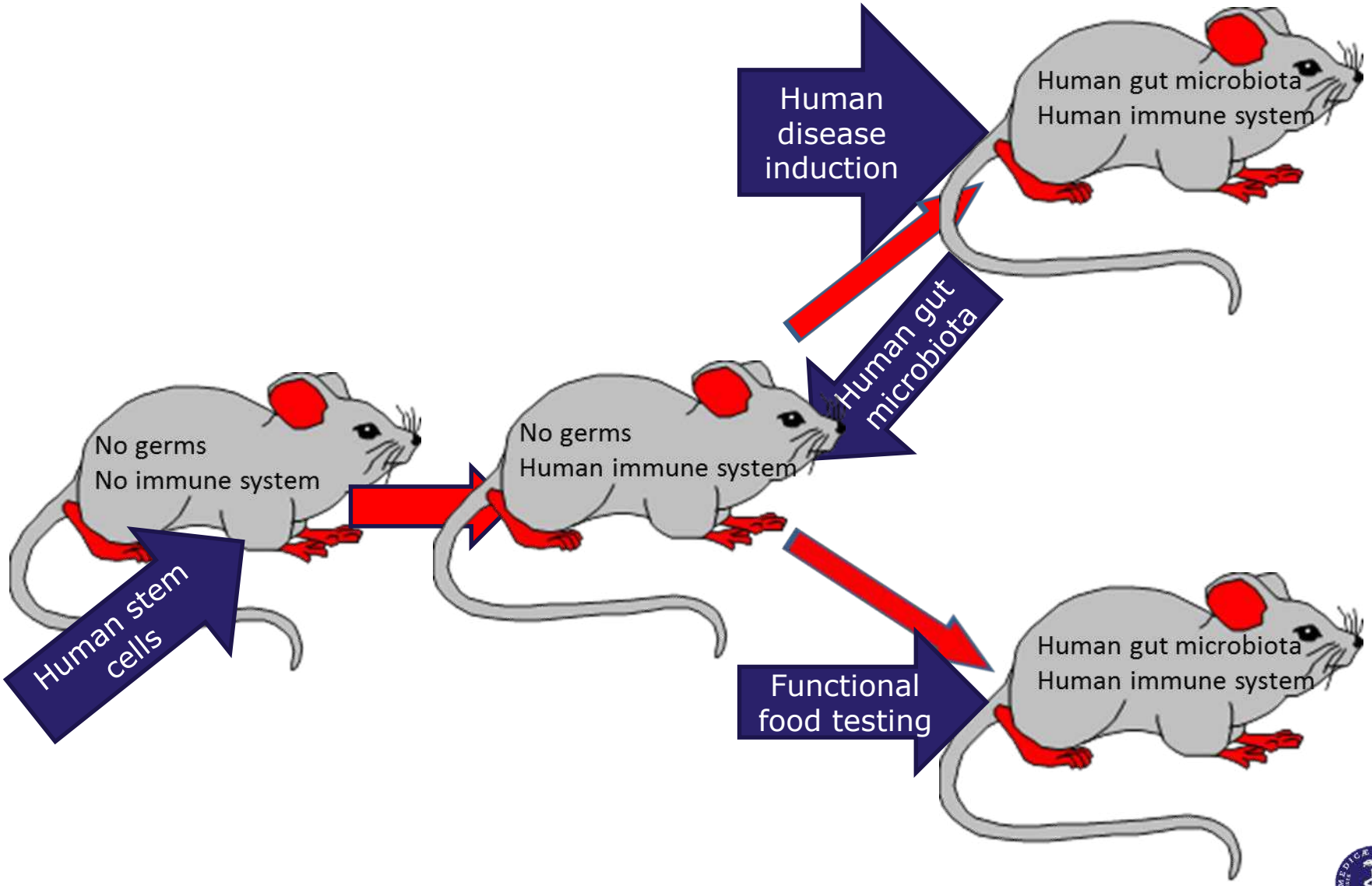
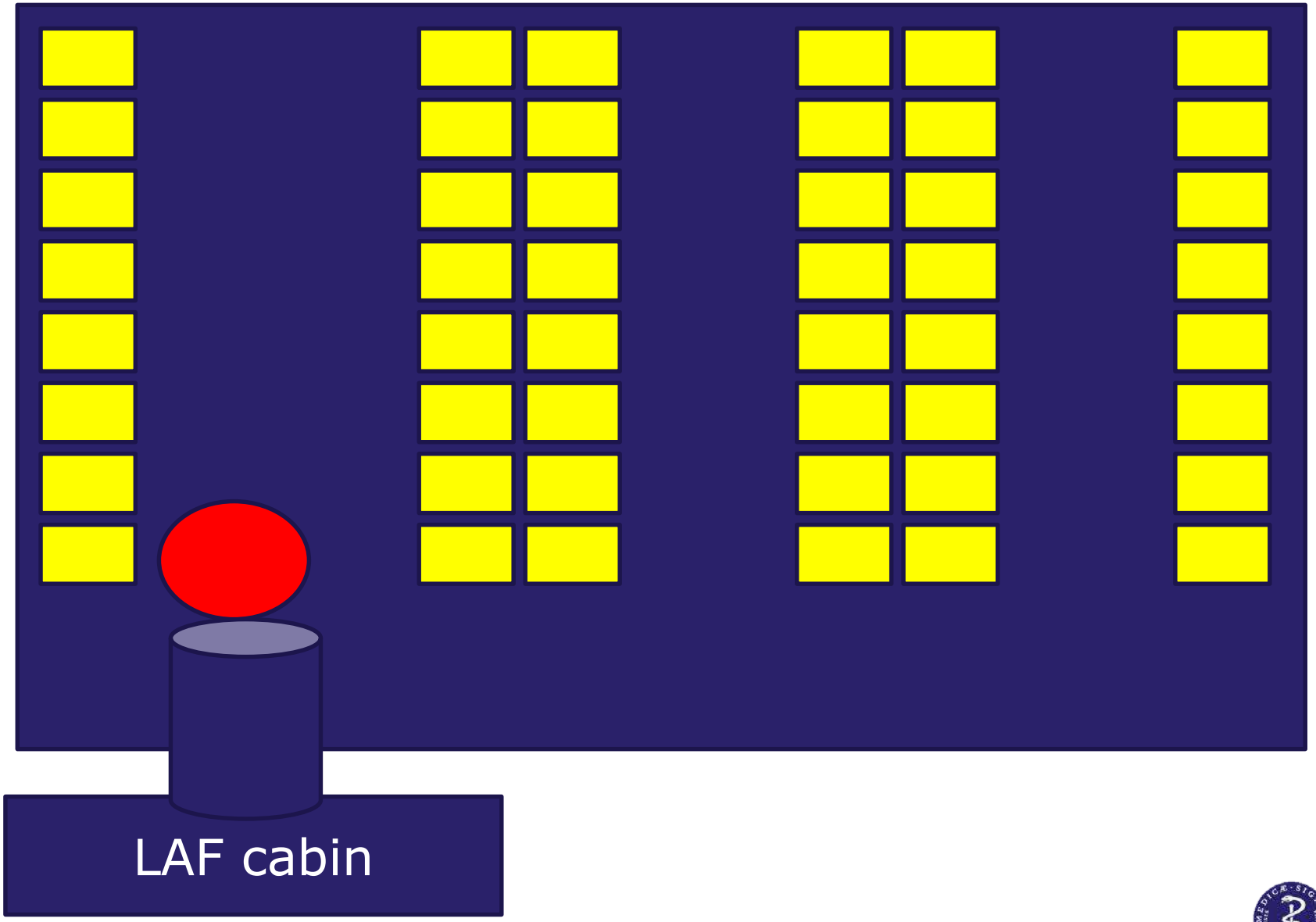
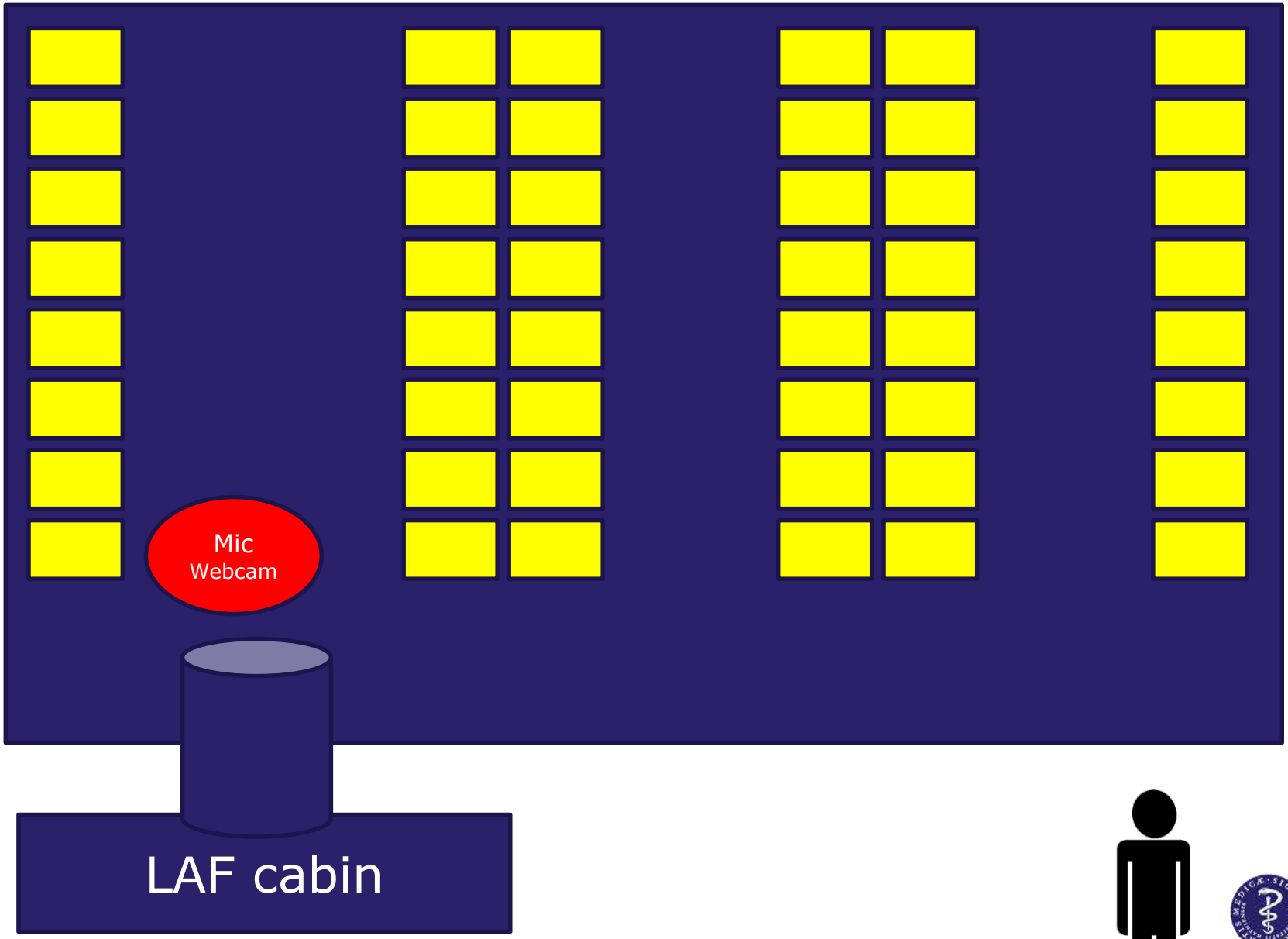
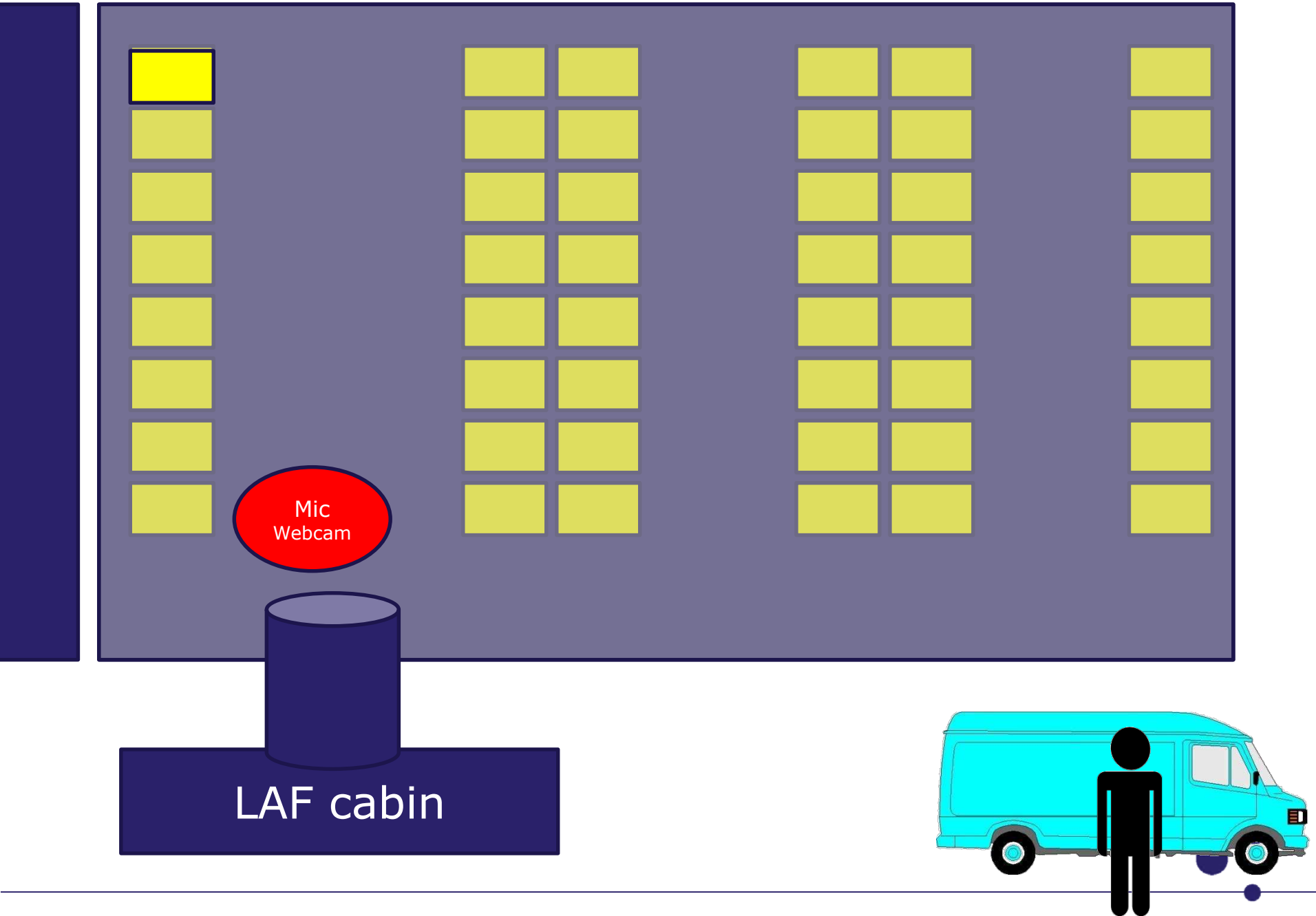
[6]Veterans Affairs Palo Alto Health Care System, Palo Alto, CA 94304, USA




No germs
No immune system
Human stem cells
No germs
Human immune system
Human gut microbiota
Human disease induction
Human gut microbiota
Human immune system
Functional food testing
Human gut microbiota
Human immune system


LAF cabin


Mic
Webcam
LAF cabin


Mic
Webcam
LAF cabin

Science fiction?

https://www.youtube.com/watch?v=T0CXJ2vtBqM

De virkelige stjerner

Majbritt Hufeldt, Dept. Vet. Disease Biology, UniCph

Lukasz Krych, Dept. Food Science, UniCph

Camilla Hartman Friis Hansen, Dept. Vet. Disease Biology, UniCph

Merete Ellekilde, Dept. Vet. Disease Biology, UniCph

Gunilla Bech-Nielsen, Dept. Vet. Disease Biology, UniCph

Frederikke Lindenberg, Dept. Vet. Disease Biology, UniCph /Brogaarden ApS

Line Sidsel Fisker Andersen, Dept. Vet. Disease Biology, UniCph

Ida Rune, Dept. Vet. Disease Biology, UniCph

Randi Lundberg, Dept. Vet. Disease Biology, UniCph /Taconic Ltd.

Katja Bangsgaard Bendtsen, Dept. Vet. Disease Biology, UniCph

Bettina Pyndt, Dept. Vet. Disease Biology, UniCph

Ellika Selfjord, Dept. Vet. Disease Biology, UniCph

Tak for opmærksomheden