

Program Summer Course 2023 yang di inisiasi oleh Fakultas Peternakan dan Pertanian Universitas Diponegoro merupakan langkah yang diambil dalam rangka peningkatan mutu dan kualitas pendidikan di lingkungan UNDIP untuk mencapai salah satu misi UNDIP sebagai *World Class University* (WCU). Tujuan *Summer Course* adalah untuk meningkatkan pengetahuan peserta tentang livestock di Indonesia, dan diharapkan akan menjalin lebih banyak kolaborasi antar Universitas di dunia. Program ini telah dilaksanakan pada tanggal 7 Agustus 2023 – 11 Agustus 2023, dan telah melibatkan 82 peserta, yang terdiri dari 40 peserta luar negeri yaitu dari Pakistan, Belanda, China, Thailand, Taiwan, Sudan, Nigeria, Jepang, Rwanda, USA dan serta 42 peserta dari Indonesia. Kegiatan ini melibatkan 3 narasumber dari luar negeri yaitu, USA, Denmark, dan Thailand. Program ini dilaksanakan secara daring melalui media zoom yang dapat di akses oleh seluruh peserta.

Tujuan dari program ini adalah :

1. Menambah wawasan bagi peserta luar negeri tentang kondisi livestock yang ada di Indonesia;
2. Menambah wawasan bagi peserta dalam negeri dan meningkatkan atmosfer pendidikan agar lebih bersifat internasional;
3. Mengembangkan jejaring internasional untuk meningkatkan kolaborasi pendidikan dan riset;
4. Meningkatkan wawasan peserta yang akan berdampak pada peningkatan kualitas penelitian sehingga dapat meningkatkan kualitas publikasi.

Jadwal kegiatan

- **Hari ke-1, Senin 7 Agustus 2023:**

- a) Pukul 13.00 WIB: Pembukaan oleh ketua panitia
- b) Pukul 13.30 WIB, materi ke-1: Introduction to Indonesian Culture dan sesi tanya jawab
- c) Pukul 15.00 WIB, materi ke-2: Introduction to Faculty of Animal Science and Agricultural Sciences, Diponegoro University, Indonesia dan sesi tanya jawab

- **Hari ke-2, Selasa 8 Agustus 2023:**

- a) Pukul 13.00 WIB, sesi Nutrition and Feed Science, materi ke-3: Feeding Managements of Livestock in Indonesia

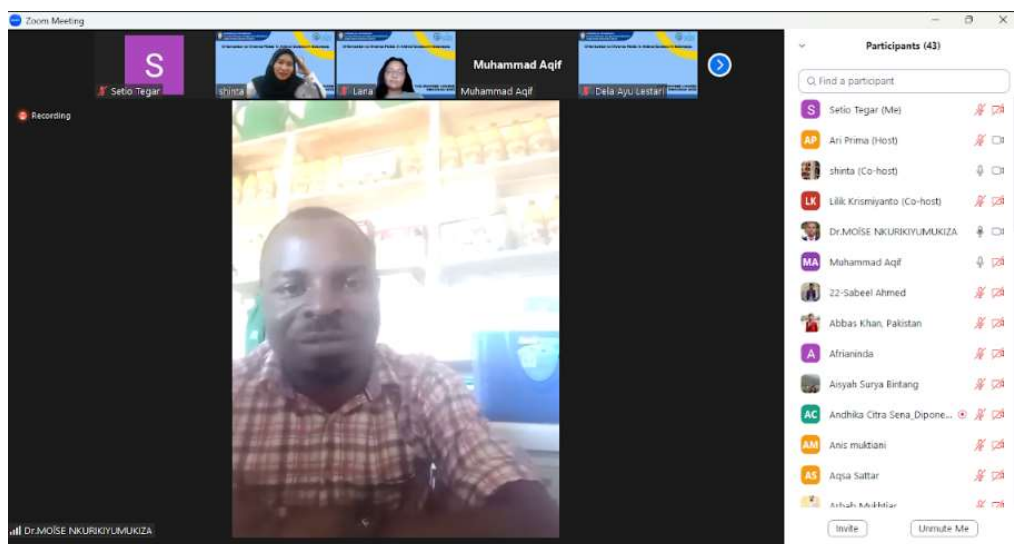
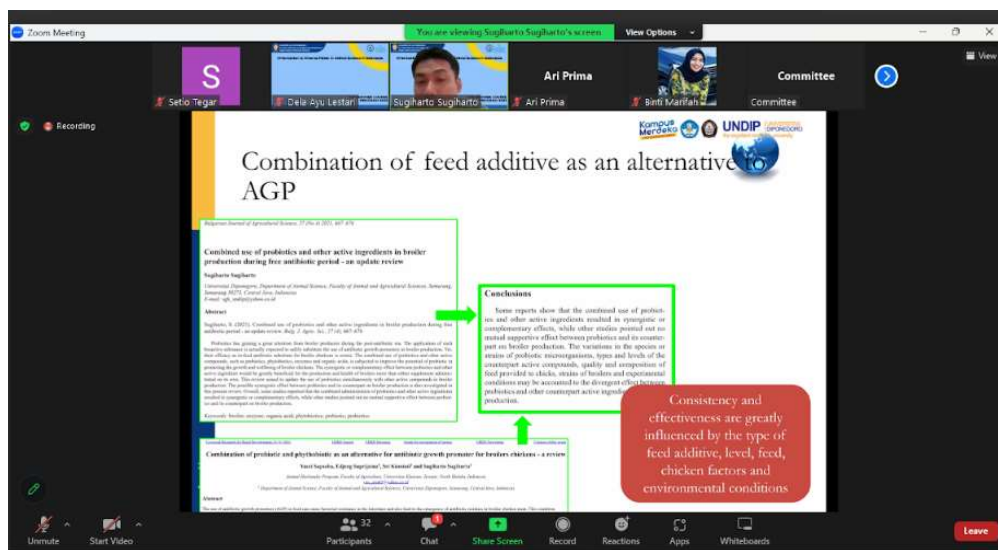
- b) Pukul 14.30 WIB, materi ke-4: Feed Manipulation in Animal science
- **Hari ke-3, Rabu 9 Agustus 2023:**
- a) Pukul 13.00 WIB, sesi Animal Genomics, materi ke-5: Introduction to Genetics, Breeding, and Reproduction in Indonesia
- b) Pukul 14.30 WIB, materi ke-6: The Application of Bioinformatics in detecting Genetic Variation to improve innate immunity in Animal
- **Hari ke-4, Kamis 10 Agustus 2023:**
- a) Pukul 13.00 WIB, sesi Poultry Science, materi ke-7: Indonesia poultry perspectives after covid 19 outbreak and food security
- b) Pukul 14.30 WIB, materi ke-8: Future and challenges of poultry industry in Indonesia
- **Hari ke-5, Jumat 11 Agustus 2023:**
- a) Pukul 13.00 WIB, sesi Ruminant, materi ke-9: Introductory Animal and Dairy Science Indonesia
- b) Pukul 14.30 WIB, materi ke-10: Current issues in ruminant: Animal health and welfare issues in ruminant production systems
- c) Pukul 15.00 WIB, penutupan oleh panitia

Pembukaan hari pertama





Penyampaian materi hari ke 1



Hari ke 2 sesi pertama

Zoom Meeting

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View

Pollution in livestock industry

Nitrogen (N) Phosphorus (P) and Potassium (K)

(Opino et al., 2017)

6

Chackrit Nuengj...

Chackrit Nuengjamno...

Vita Restrisnani

Ikania A

Shinia

Andrika Citra Sena, D...

Ari Prima

Surya Chula

D_UNDIP_Rina Muryani

Lilik Krismiyananto

faheem.khan

Najaf Ali

Sadulman Sadulman

Lana

Misha irfan

Miftah Nurfarid

Della Ayu Lestari

Syaddad

Nabila Swarna Puspa H

Urmute

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10:11

06/08/2023

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Pollution in livestock industry

Ammonia (NH₃)

Ammonia Production Cycle from Poultry Shed

(Sanjay Gapat, 2020) 7

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Pollution in livestock industry

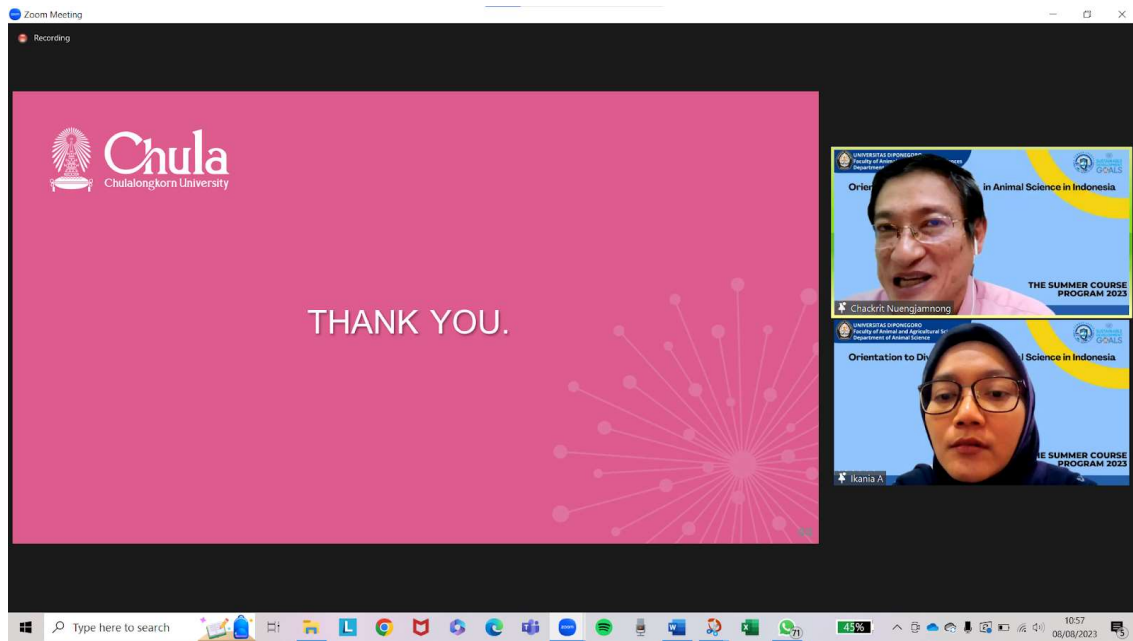
Ammonia (NH₃)

Ammonia Production Cycle from Poultry Shed

(Sanjay Gapat, 2020) 7

Chackrit Nueng...

all Chackrit Nuengjamong



Sesi ke 2

Zoom Meeting

Recording

Dairy Animal health and welfare_Summer Course 2023_DianHarjanti

Current issues in dairy industry :
Animal health and welfare issues
in dairy production systems

Dian Wahyu Harjanti, DVM., PhD.
Faculty of Animal and Agricultural Sciences
dianwahyuharjanti@lecturer.undip.ac.id
harjanti.dian@gmail.com

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13:17 06/08/2023

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Participants: Vita Restrisnani, Dr.MOISE NKURIKIYU..., Ikania A, Ari Prima, Delia Ayu Lestari, Surya CHUS

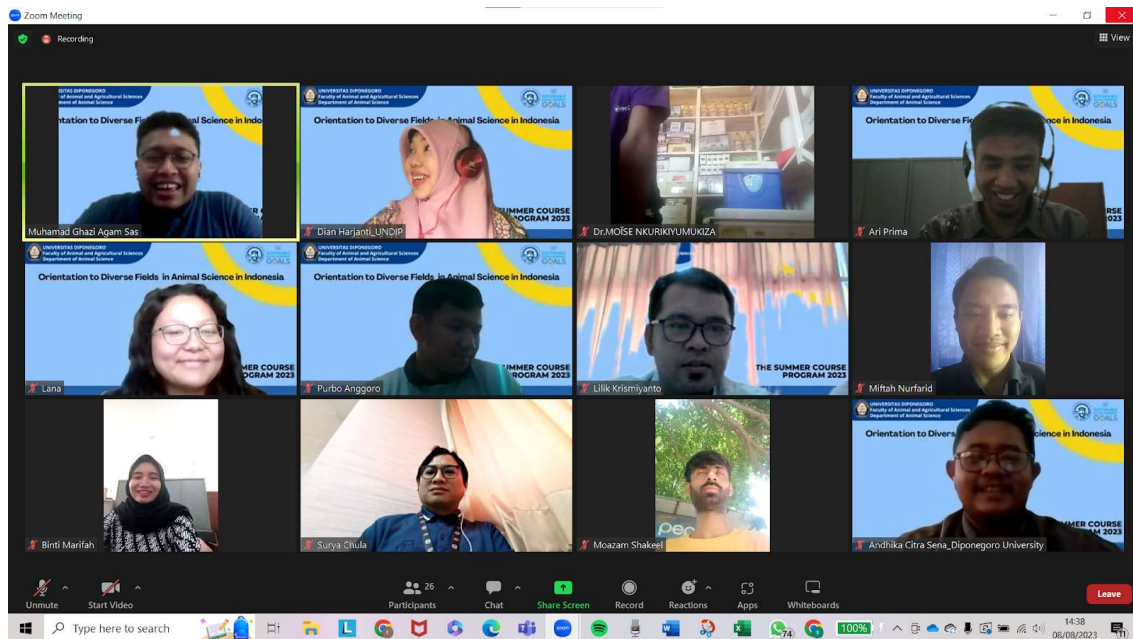
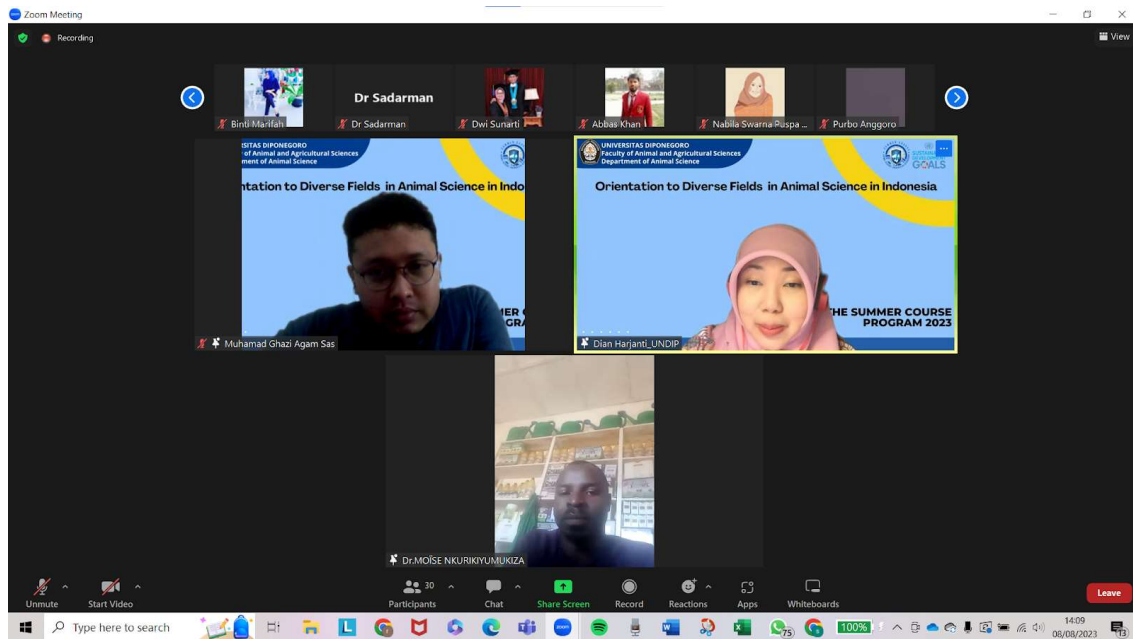
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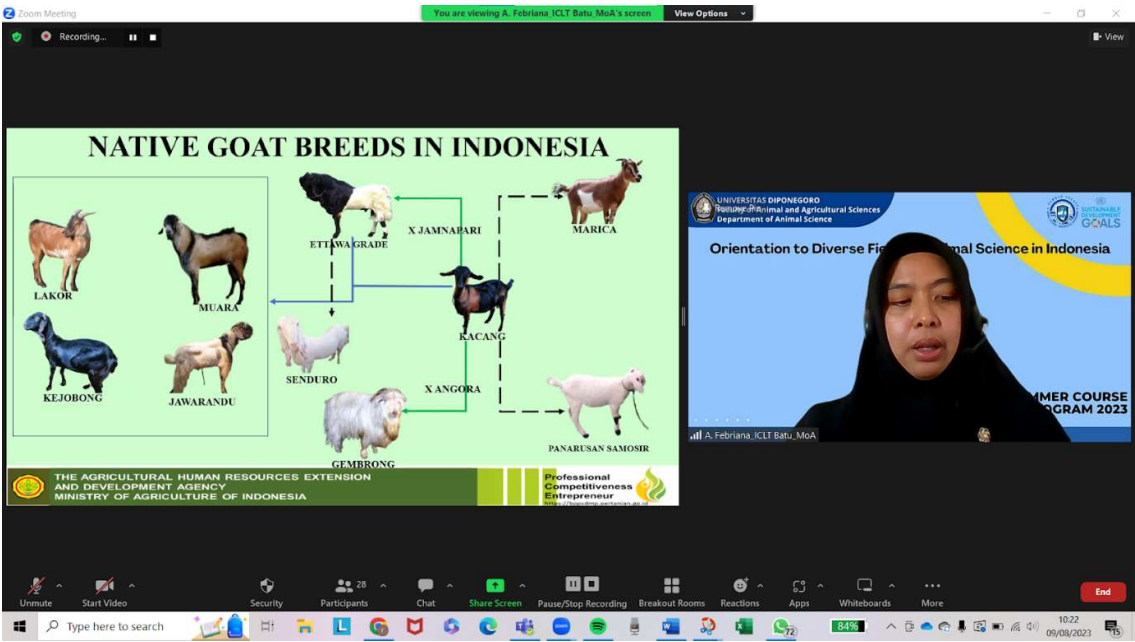
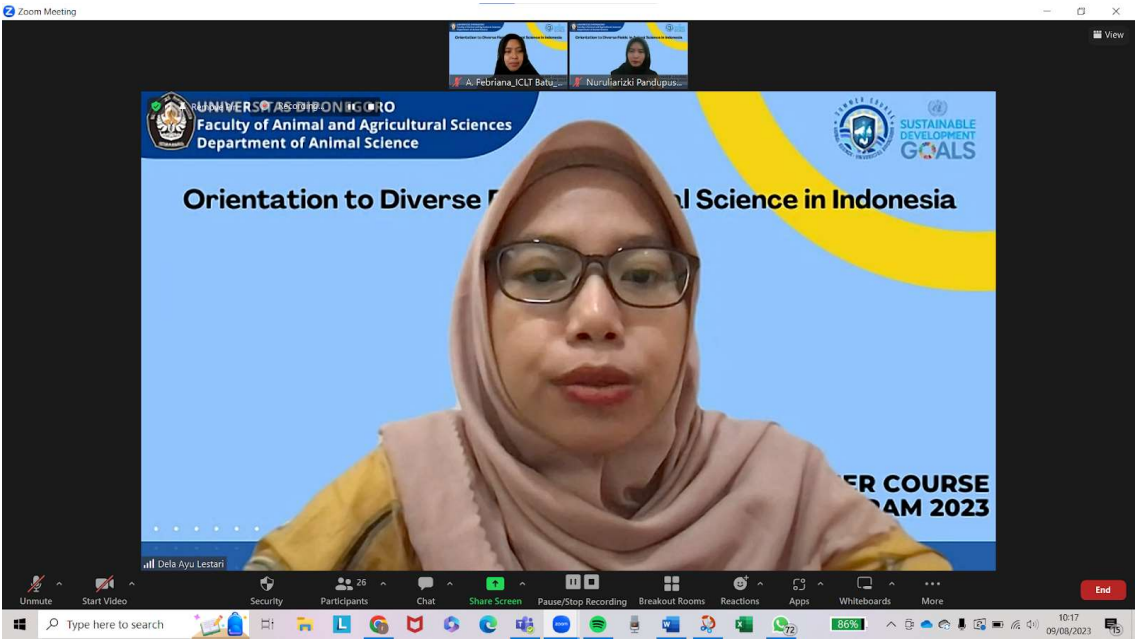
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13:15 06/08/2023



Hari ke 3 sesi pertama



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g.2436A>G (SNP2)

AA AG GG

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Professional Competitiveness Entrepreneur

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10:49 09/08/2023

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Conclusion

1. Indonesian native goats present the highest frequency of the haplogroup B in the world
2. Genetic polymorphisms of Indonesian native goat breeds might be utilized as one of the fundamental elements required in breeding program for the advancement of livestock production in Indonesia.
3. The advancement of breeding selection in small ruminants, i.e. crossbreed could be an alternative source of red meat in Indonesia
4. The genetic polymorphisms in Indonesian native goat breeds showed that native breeds could be a prominent goat breeds based on productive and reproductive traits.
5. Molecular research could revealed the prominent genetic marker.

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Hari ke 4

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Ulla Bays

Strategic Options for Facing the Challenges

- Smarter production, nutrition, and waste management, as well as increased animal welfare, have the potential to decrease the impact of livestock farming on our natural resources
- Digitalization can maximize the impact of these strategic initiatives to significantly reduce the impact of meat production and simultaneously drive economic benefits

Annual occurrences (own monitoring)

Year

Precision Agriculture

Precision Farming

Smart Agriculture

Climate-Smart Agriculture

Digital Agriculture

Agri-food 4.0

Digital Farming

Yearly smoothed number of studies published in the WoS database from 1993 to 2019 containing the corresponding term (Bertoglio et al., 2021)

Ulla Bays

Rafli Kamil

Rafli Kamil

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13:33 10/08/2023

Zoom Meeting
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The Evolution of Technology in Agriculture

The diagram illustrates the progression of agricultural technology. It starts with 'PAST' (18th century plough, 19th century machinery & GPS tracking) leading to 'PRESENT' (confused farmer overwhelmed by data). The 'FUTURE' section shows 'DATA INSIGHT' leading to various smart farming technologies: connected weather stations, drone weather forecasts, plant sensors (big, sap flow), and UAVs with sensor payloads. The timeline is marked with '18th CENTURY', '19th CENTURY', and '2000s'.

Ulla Bay's video feed showing a woman speaking.

Rafli Kamil's video feed showing a man speaking.

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Recording

Precision Livestock Farming (PLF)

- Precision Livestock Farming (PLF) is a tool to manage livestock
 - Automated & frequent measurements
 - Real-time
 - Improved reliability & accuracy
- What do we monitor?
 - Temperature
 - Climate/environment
 - Water
 - Feed
 - Weight
 - Behavior
 - Reproduction
 - Health
 - Welfare
 - Eventually a lot more

Ulla Baysi

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Precision Livestock Farming (PLF)

Number of monitoring systems in PLF by species

Species	Number of monitoring systems
Cows	67
Pigs	14
Chickens	13

Field readiness of precision livestock farming monitoring systems by farm animal species (BIOMIN, 2017)

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PLF in Ruminants

2. Identification and tracking system

Unmanned aerial vehicle (UAV) that autonomously locates and visually identifies individual Holstein Friesian cattle by their uniquely colored coats (Andrew et al., 2020)

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PLF in Ruminants

2. Identification and tracking system

Unmanned aerial vehicle (UAV) that autonomously locates and visually identifies individual Holstein Friesian cattle by their uniquely colored coats (Andrew et al., 2020)

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PLF in Swine

1. Identification and tracking system

Sensitivity, specificity and accuracy of the SVM classifier and scoring steps.

Steps	Sensitivity (%)	Specificity (%)	Accuracy (%)
Classification	94.4	94.0	94.2
Scoring	94.5	93.4	94.0

Nashirahmadi et al. (2019)

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PLF in Swine

2. Disease detection

Distribution of herds by prevalence of *M. hyopneumoniae*, detected by PCR and ELISA, and the mean coughing index of each group.

		ELISA (<50% prevalence)	ELISA (>50% prevalence)
PCR (<50% prevalence)	Number of herds	10	8
	Coughing index (x)	1.22 (SD 1.19)	2.10 (SD 1.59)
PCR (>50% prevalence)	Number of herds	9	32
	Coughing index (x)	2.86 (SD 1.75)	2.35 (SD 1.79)

Nathues et al. (2012)

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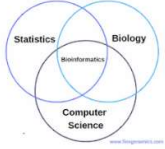
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PLF in Poultry

2. Improving gut health



- Omics technology and bioinformatics enable us to gather information on an animal's gut health
- Birds fed a phytogetic feed additive had 73 genes expressed differently than that of birds fed a control diet



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Della Ayu Lestari Luthfi upi



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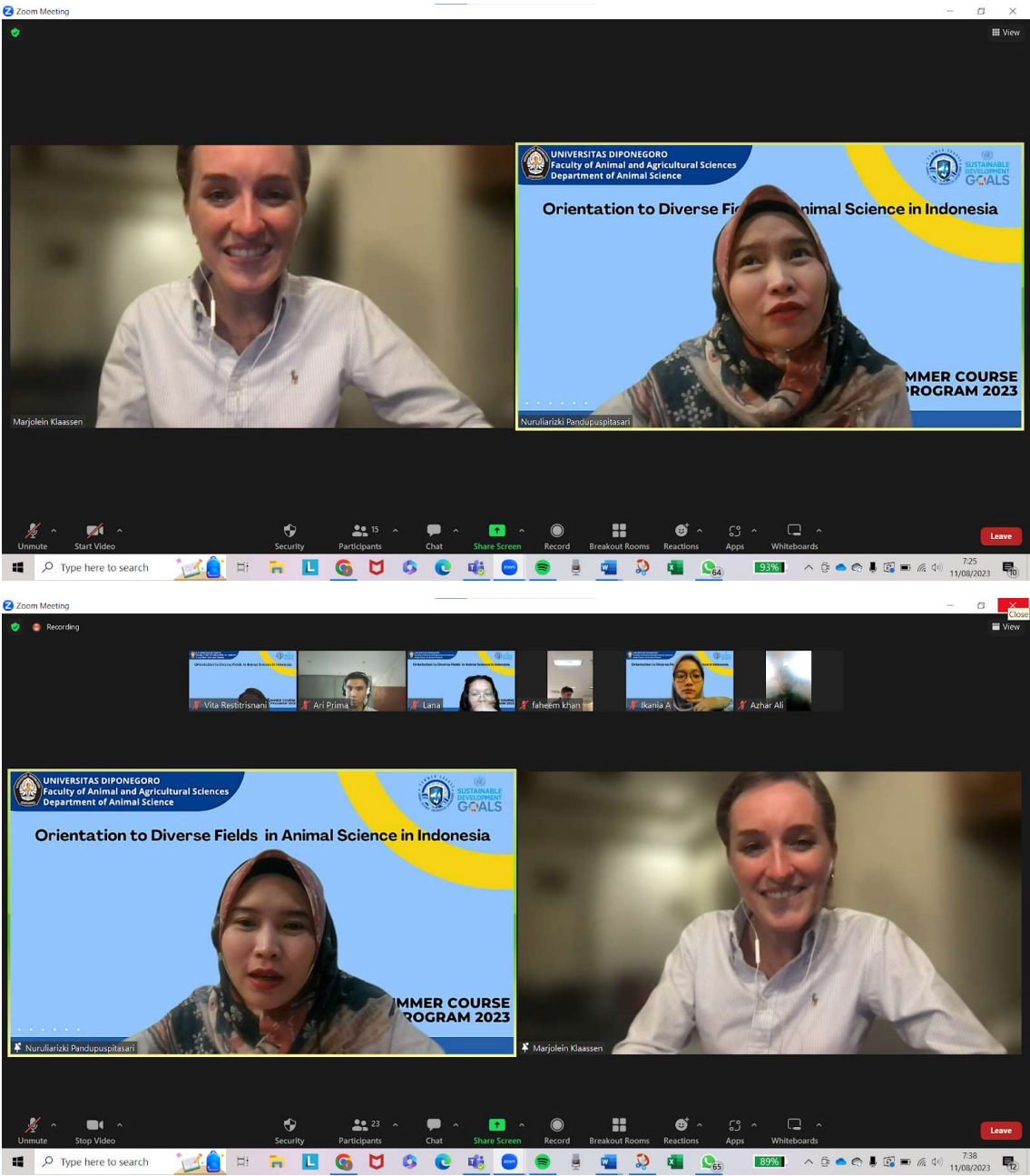
Rafli Kamil

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Hari ke 5



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The gut microbiome in human health

11th of August, 2023
Marjolien A.Y. Klaassen, MD
Staff scientist, fellow

Department of Biological Engineering, Massachusetts Institute of Technology (MIT)
Department of Gastroenterology and Hepatology, Massachusetts General Hospital (MGH)
Center of Computational and Integrative Biology, Harvard University
Boston, USA

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Nurullarizi Pandupuspitasari

Marjolien Klaassen

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The human gut wall and the gut microbiota

Gut microbiota

- All microbes that live collectively in GI-tract.
- Ecosystem involved in complex interactions with each other to fulfil their functions.
- Gut microbiota contains same amount of bacterial cells as we have human cells.
- Function amongst others is digesting food and training immune systems (together with M-cells and Peyer's patches).
- The gut microbiota train the immune system via Peyer's patches and help metabolizing and uptake of nutrients.

contact: m.a.y.klaassen@umcg.nl

Marjolien Klaassen

Nurullarizi Pandupuspitasari

Vita Restrisnani

Ari Prima

Azhar Ali

Ikanis A

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