Sustainability Report 2022

School of Veterinary Medicine and Biomedical Sciences
IPB University

Smart Kandang 4.0 Berbasis teknologi IoT

Kembangkan Smart Kandang 4.0 Berbasis teknologi IoT untuk efisiensi manajemen produksi Ayam Pedaging. Kegiatan ini merupakan hasil kerjasama antara IPB dengan mitra PT Zara Propertifarm Indonesia yang dilaksanakan melalui skim pendanaan matching fund kedaireka. Kegiatan ini berfokus dalam mengembangkan inovasi teknologi Internet of Things (IoT) untuk digunakan dalam sisem pemeliharaan broiler menggunakan kandang closed house. Teknologi IoT sangat membantu proses budidaya broiler sehingga dapat dilakukan dengan lebih efektif dan efisien. Penerapan teknologi ini meliputi system monitoring realtime dan otomatisasi.

Smart Cage 4.0 based on IoT Technology

Developing Smart Cage 4.0 based on IoT Technology for efficient broiler production management.

This activity is a collaboration between IPB University and PT Zara Propertifarm Indonesia trough “Matching Fund Kedaireka” budgeting scheme. This activity focus on an innovative technology, named Internet of Things (IoT), for broiler management using closed house system. By utilizing IoT technology, broiler management can become more efficient and effective. The application of this technology includes real-time monitoring system and automatization.

3 Paper High Impact
Hasil Kolaborasi Internasional Perkuat SKHB IPB University

Paper #1: Implan biomedis berbahan dasar logam untuk penanganan patah tulang telah dikembangkan sehingga dapat diserap oleh tubuh. Pemanfaatan logam yang telah terserap tubuh memiliki banyak manfaat yang tidak terbatas dan tidak perlu pembedahan ulang untuk mengambil implant, tetapi juga menaggulangi resiko kematian akibat pembedahan ulang. Mekanisme penyerapan produk degradasi logam oleh tubuh dengan perinci dijelaskan melalui naskah review paper yang ditulis bersama dengan peneliti dari Kerjasama internasional.

Paper #2: Manipulasi genetik penyakit hewan *Theileria equi* untuk pengembangan uji cepat piroplasmosis pada kuda merupakan hasil Kerjasama multinasional dengan kolaborator dari Jepang dan Mongolia. *Theileria equi* menyebabkan kehilangan darah yang berdampak serius pada kuda menyebabkan pertumbuhan terhambat, penurunan bobot badan, penurunan daya kerja, dan penurunan daya reproduksi. Hewan yang terinfeksi mungkin tetap sebagai pembawa parasit (karier) dalam waktu yang lama dan bertindak sebagai sumber infeksi. Melalui inovasi ini, diagnosa menjadi lebih cepat sehingga penanganan menjadi lebih tepat.

Paper #3: Hepatitis adalah peradangan hati disebabkan oleh infeksi virus, bisa juga disebabkan oleh kondisi atau penyakit lain. Jika tidak ditangani dengan baik, hepatitis dapat menimbulkan komplikasi, seperti gagal hati, sirosis, atau kanker hati (hepatocellular carcinoma). Hepatitis yang ditularkan dari kelinci atau dikenal dengan hepatitis E virus (HEV) telah dideteksi pada pasien manusia. HEV pada kelinci liar telah dideteksi dan diisolasi melalui kerjasama penelitian multinasional.

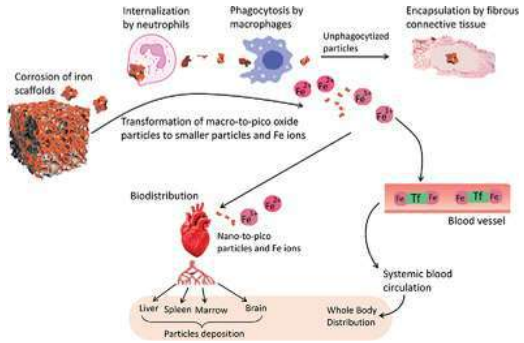
3 High Impact Papers Resulted from International Collaborations Strengthen SKHB IPB University

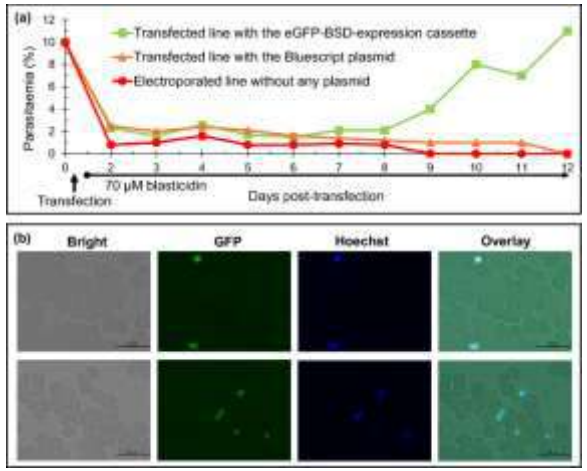
Paper #1: Metal-based biomedical implants for the treatment of fractures were developed so that the implants can be absorbed by the body. Absorption of metals by the body has unlimited benefits, including no repeated surgery needed to remove implants and the reduction of mortality risk due to repeated surgeries. The mechanism for the absorption of degraded metal products by the body was explained in detail through a review paper written together with researchers from international collaboration partners.

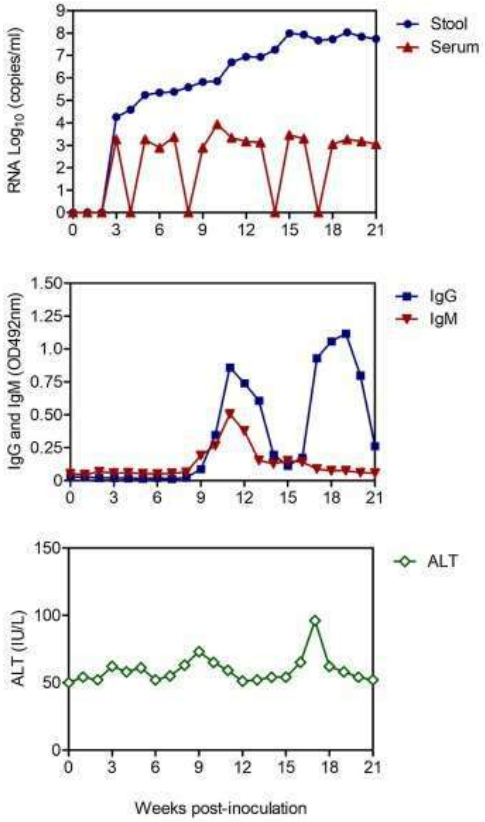
Paper #2: Genetic manipulation of *Theileria equi* for the development of a rapid test for pyroplasmosis in horses was an international research collaboration between scientist from SKH IPB University, Japan and Mongolia. *Theileria equi* causes blood loss which has a serious impact on horses causing stunted growth, decreased body weight, and decreased reproduction. Infected animals may remain as carrier of this parasite for a long time and act as a source of infection. Through this innovation, diagnosis becomes faster which facilitiates a better treatment.

Paper #3: Hepatitis is inflammation of the liver caused by viral infection, other conditions, or diseases. If it is not treated properly, hepatitis leads to complications, such as liver failure, cirrhosis, or liver cancer (hepatocellular carcinoma). Hepatitis transmitted from rabbits, caused by hepatitis E virus (HEV) has been detected in human. HEV in wild rabbits has been detected and isolated through a multinational research collaboration.

3 Paper High Impact Karya Dosen Muda
Hasil Kolaborasi Internasional Perkuat SKHB IPB University







Biotechnology Journal

Q1 — Applied Microbiology and Biotechnology — best quartile

SJR 2020 1.14

powered by scimagojr.com

Scientific Reports

Q1 — Multidisciplinary — best quartile

SJR 2020 1.24

powered by scimagojr.com

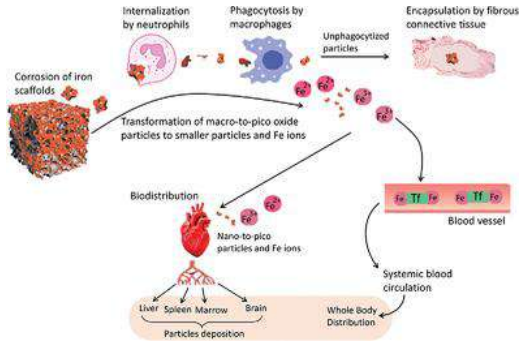
Veterinary Microbiology

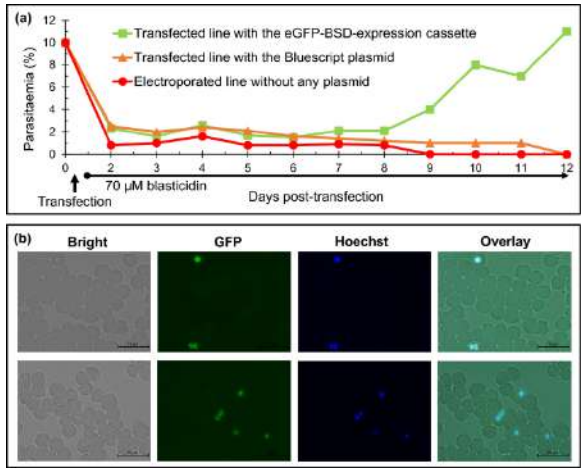
Q1 — Medicine (miscellaneous) — best quartile

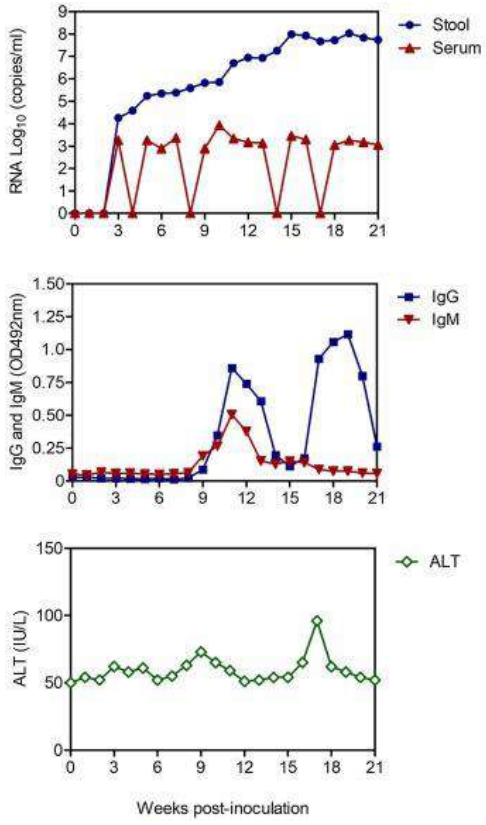
SJR 2020 1.16

powered by scimagojr.com

3 High Impact Papers of Young Researches as the Result of International Collaborations Strengthen SKHB IPB University







Biotechnology Journal

Q1 — Applied Microbiology and Biotechnology — best quartile

SJR 2020 1.14

powered by scimagojr.com

Scientific Reports

Q1 — Multidisciplinary — best quartile

SJR 2020 1.24

powered by scimagojr.com

Veterinary Microbiology

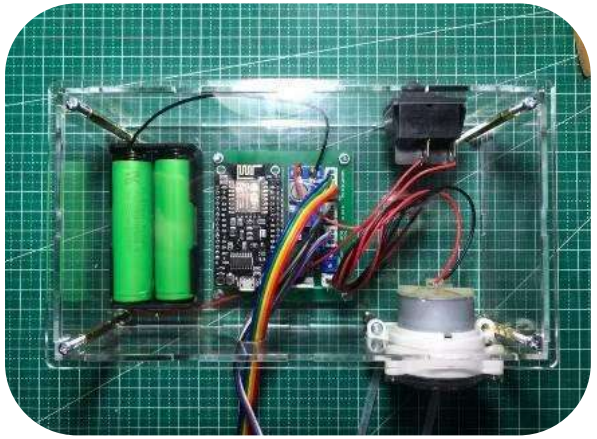
Q1 — Medicine (miscellaneous) — best quartile

SJR 2020 1.16

powered by scimagojr.com

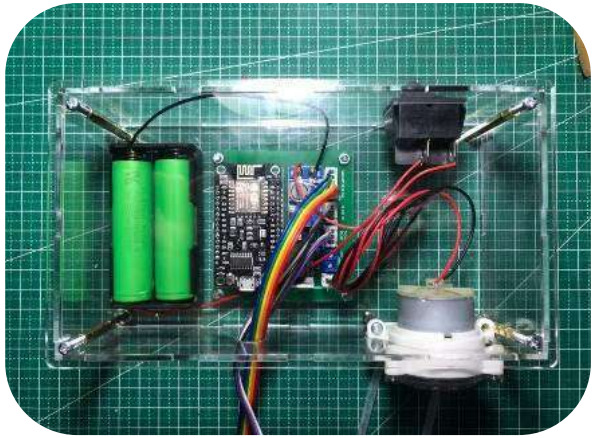
Ciptakan Vetfus: Infus Berbasis Digital untuk Hewan

Vetfus merupakan inovasi yang dikembangkan oleh tim PKM SKHB IPB untuk mengatasi permasalahan yang dihadapi oleh praktisi ketika memberikan terapi infus pada hewan. Perangkat vetfus bekerja menggunakan teknologi digital dengan berbasis pada Internet of Things yang disematkan pada hewan menggunakan rompi khusus. Sistem pemberian cairan yang dikembangkan pada perangkat vetfus berupa system pompa otomatis dan kontrol jarak jauh menggunakan konsep Internet of Things.



Vetfus: Digital Based Infusion for Animals

Vetfus is a solution developed by a PKM team of SKHB IPB University in order to address problems faced by practitioners when administering infusion therapy to animals. The Vetfus device works using digital technology based on the "Internet of Things" which is embedded in animals wearing special vests. Vetfus' liquid delivery system consists of an automatic pump and remote control using the Internet of Things concept.



Terobosan Terapi Infark Jantung dengan Stem Cell pada Hewan Model Infark Jantung

Kegiatan dalam penelitian “Pembuatan replika dan penyembuhan dinding jantung infark pada babi sebagai model terapi untuk manusia” merupakan terobosan yang inovatif dan visioner hasil kolaborasi antara SKHB IPB, FK Universitas Indonesia dan IMERI UI (Indonesia Medical Education and Research Institute). Kegiatan ini menghasilkan novelty hewan model infark jantung yang mampu menunjukkan progesifitas infark serta respon terhadap terapi.

Innovation for Heart Infarct Therapy using Stem Cell in Heart Infarct Animal Model

Research about "Making replicas and healing of infarcted hearts in pigs as a therapeutic model for humans" is an innovative and visionary achievement. Researchers from SKHB IPB, FK University of Indonesia, and IMERI UI (Indonesia Medical Education and Research Institute) collaborated on this research. A novel animal model of cardiac infarction demonstrating infarction progression and response to therapy has been developed through this activity.

Kandidat Obat Antikoinfeksi Covid-19

Bintang Aditia Tri Wibowo dan Imam Ali Alzaini Bychaqi membawa invensi biomedis berupa kandidat obat antikoinfeksi Covid 19 berbasis ekstrak maggot (Hermetia illucens; Black Soldier Fly) pengganti antibiotik konvensional.

Terapi antibiotik yang pada prakteknya tidak akurat memicu terjadinya Antimicrobial Resistance (AMR) sehingga lahirlah invensi maggot sebagai solusi alternatif antibiotik. Invensi tersebut terbukti secara in silico dan in vitro dapat membunuh 3 bakteri pernapasan dengan aktivitas yang lebih baik dibandingkan antibiotik konvensional.

Candidates for Covid-19 Anticoinfection Drugs

Bintang Aditia Tri Wibowo and Imam Ali Alzaini Bychaqi invented a biomedical invention termed as candidate of medicine for anti-COVID-19-cooinfection based on maggot extract of black soldier fly (*Hermetia illucens*) as an alternative for conventional antimicrobial.

Inappropriate administration of antibiotics triggers the emergence of Antimicrobial Resistance (AMR). Maggot extract of black soldier-fly can be used as a candidate of alternative to antibiotics. *In vitro* and *in silico* studies have demonstrated that this invention kills respiratory bacteria more effectively than conventional antibiotics.

Kembangkan Katulac, Peneliti SKHB IPB University Gaet DUDI Untuk Tingkatkan Produktifitas Ternak Nasional

Inovasi milik Prof drh. Agik Suprayogi berupa katuk depolarisasi telah terbukti mampu meningkatkan produktivtias ternak. Masyarakat juga menerima manfaat melalui penerapan pakan komplit sapi yang dilengkapi dengan katuk depolarisasi.

Development of Katulac: Researcher from SKHB IPB University Collaborates with DUDI to Increase the National Livestock Productivity

An innovation by Prof. drh. Agik Suprayogi, termed as “Katulac” depolarizing sweet leaf bush (*daun katuk*, Indonesian), proves to be able to increase livestock productivity. The community also receives benefits through the application of cattle feed supplemented with depolarizing sweet leaf bush.

Kurban Aman di Era Pandemi Covid Gelombang Kedua

Kajian Pelaksanaan Kurban yang Safe from Farm to Table di Era Pandemi COVID-19. Seminar ini diharapkan dapat memberikan pengetahuan dan informasi tentang bagaimana pelaksanaan Qurban di masa Pandemi Covid19. Penyembelihan hewan kurban idealnya dilaksanakan di Rumah Pemotongan Hewan (RPH), namun karena keterbatasan jumlah RPH, maka dilakukan di areal yang telah ditetapkan oleh Pemerintah setempat, atau dilaksanakan oleh Pengurus DKM, dengan melibatkan banyak warga masyarakat. Karena itu sangat perlu kita mendapatkan informasi dan pengetahuan tentang pelaksanaan Qurban.

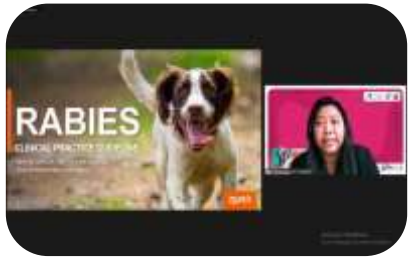
Safe Qurban Sacrifice during the Second Wave of COVID-Pandemic

Seminar about "Qurban Sacrifice that is Safe from Farm to Table during the COVID-19 Pandemic". It is expected that this seminar will provide knowledge and information about the procedure for conducting Qurban sacrifices during the Covid-19 pandemic. Ideally, the slaughter of sacrificed animals is carried out in slaughterhouses. However, due to the limited number of slaughterhouses available, it is also carried out in facilities determined by the government, or by the mosque management community that involves civilians. Therefore, it is very important for the community to have knowledge about good management practices for Qurban sacrifice.

Sukseskan Dunia Bebas Rabies, SKHB IPB University tingkatkan pemahaman Pengendalian Rabies

Sekolah Kedokteran Hewan dan Biomedis IPB University memperingati hari World Rabies Day yang bertujuan untuk memberikan sosialiasi tentang penyakit rabies, pencegahan dan penanganan serta strategi pengendalian rabies. Tema peringatan Rabies Daya adalah “Rabies: Fact, Not Fear”. Rangkaian kegiatan meliputi: Edukasi Rabies, Edukasi Pakan Hewan Kesayangan, Vaksinasi Rabies gratis, Pembagian Pakan anjing dan kucing, dan Lomba Foto dengan hewan kesayangan yang telah divaksin Rabies, lokasi di Kebun Agrianita SKHB IPB.

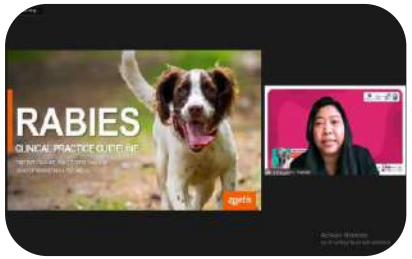
Adapun rangkaian acara tahap kedua yang diadakan secara online pada tanggal 2 oktober 2021, sebagai berikut: Rangkaian selanjutnya adalah puncak acara pada tanggal 2 Oktober 2021 ini merupakan Webinar International yang menghadirkan tiga pemateri luar biasa.



SKHB IPB University Enhance the Understanding of Rabies Control to Support a World Free from Rabies

School of Veterinary Medicine and Biomedical Sciences IPB University commemorated World Rabies Day by providing socialization about rabies prevention, control and eradication strategies. The theme of this event was “Rabies: Fact, not fear”. The activities included: education about rabies, education on pet feed, free rabies vaccination, distribution of dog and cat feed, and a photo contest with pets that have been vaccinated against rabies located at the Agrianita garden SKHB IPB University.

In the second phase of the event, three outstanding presenters were featured in an international webinar hosted online on October 2, 2021.



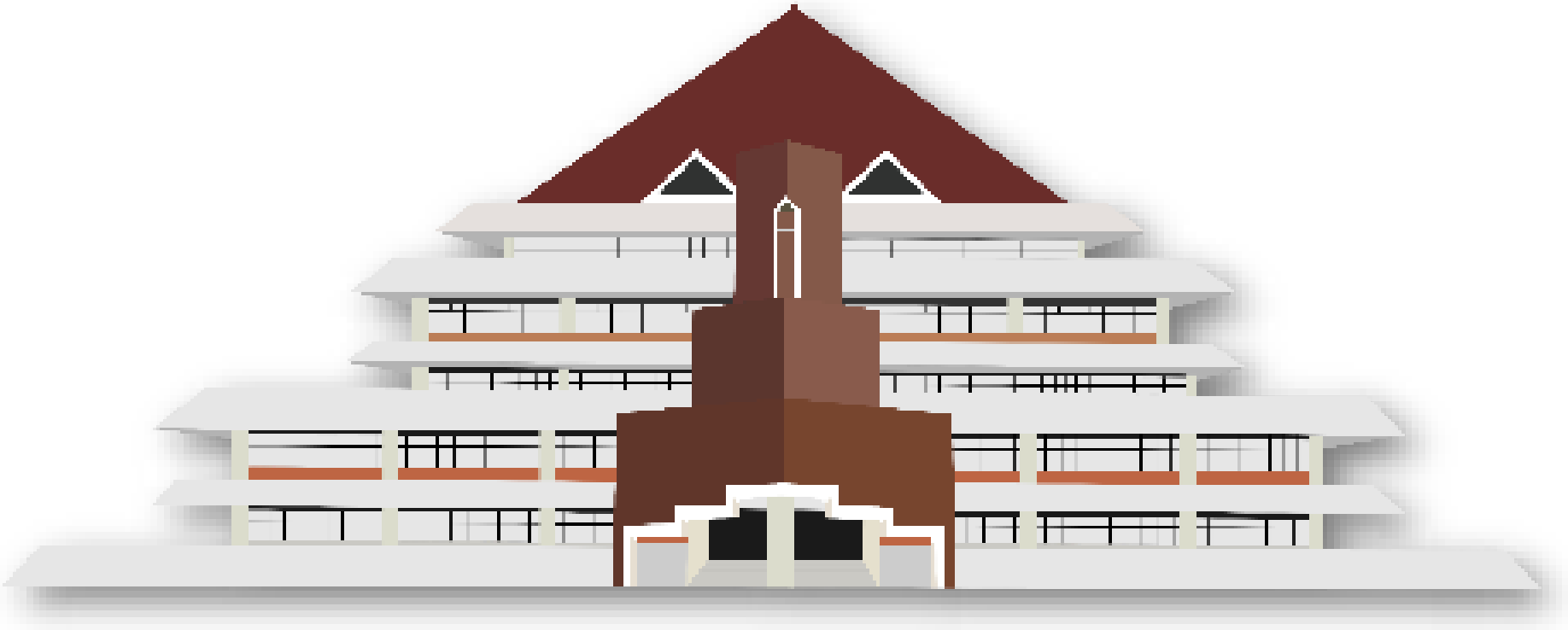
SHKB – JAPFA
Poultry Health Research Farm (PHRF)

SKHB IPB University bekerjasama dengan PT Japfa *Comfeed Indonesia* Tbk untuk membangun *Poultry Health Research Farm* (PHRF). Kerjasama dilakukan dalam upaya meningkatkan kualitas sumber daya manusia melalui penyediaan prasarana Pendidikan dibidang kesehatan perunggasan untuk menunjang inovasi di bidang akademik dan meningkatkan kualitas sumberdaya manusia yang siap terjun ke dunia kerja. Kerjasama ini juga diharapkan dapat memberikan benefit kepada mitra perusahaan sebagai media promosi dalam mendukung serta pengembangan Tri Dharma Perguruan Tinggi khususnya di SKHB IPB University.

SHKB – JAPFA
Poultry Health Research Farm (PHRF)

SKHB IPB University collaborates with PT Japfa *Comfeed Indonesia* Tbk to establish *Poultry Health Research Farm* (PHRF). The collaboration is carried out as a strategy to improve the quality of human resources through the provision of educational infrastructure, particularly in poultry management and health facility. This facility supports innovation in the academic field and enhances the capacity of human resources to be ready for the work market. The collaboration will also serve as a promotional medium for corporate partners in supporting and developing the Three Pillars of Higher Education, particularly at SKHB IPB University.

Thank you



To Harmonize Animal, Human, and Environment Health